

HP StorageWorks

Enterprise File Services WAN Accelerator 1.2 Command-Line Interface reference manual



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Introduction

In This Introduction

Welcome to the *HP StorageWorks Enterprise File Services WAN Accelerator Command-Line Interface Reference Manual*. Read this introduction for an overview of the information provided in this guide and for an understanding of the documentation conventions used throughout. This introduction contains the following sections:

- ◆ [“About This Guide,”](#) next
- ◆ [“Hardware and Software Dependencies”](#) on page 12
- ◆ [“Ethernet Network Compatibility”](#) on page 12
- ◆ [“Antivirus Compatibility”](#) on page 12
- ◆ [“Additional Resources”](#) on page 13
- ◆ [“Contacting HP”](#) on page 14

About This Guide

The *HP StorageWorks Enterprise File Services WAN Accelerator Command-Line Interface Reference Manual* is a reference manual for the HP EFS WAN Accelerator Command-Line Interface (CLI) for the HP EFS WAN Accelerator. This manual lists commands, syntax, parameters, and example usage.

Types of Users

This guide is written for storage and network administrators with familiarity administering and managing networks using Common Internet File System (CIFS), HyperText Transport Protocol (HTTP), File Transfer Protocol (FTP), and Microsoft Exchange.

Organization of This Guide

The *HP StorageWorks Enterprise File Services WAN Accelerator Command-Line Interface Reference Manual* includes the following chapters:

- ◆ [Chapter 1, “Using the Command-Line Interface,”](#) describes how to connect and use the HP EFS WAN Accelerator Command-Line Interface.
- ◆ [Chapter 2, “User-Mode Commands,”](#) provides a reference for user-mode commands.

- ◆ [Chapter 3, “Enable-Mode Commands,”](#) provides a reference for privileged-mode commands.
- ◆ [Chapter 4, “Configuration-Mode Commands,”](#) provides a reference for configuration-mode commands.
- ◆ [Appendix A, “Configuring WCCP,”](#) describes how to configure the HP EFS WAN Accelerator for the Web Cache Communication Protocol (WCCP). It also includes instructions for configuring the WCCP router.
- ◆ [Appendix B, “Configuring PBR,”](#) describes how to configure the HP EFS WAN Accelerator for Policy-Based Routing (PBR). It also includes instructions for configuring the PBR router.
- ◆ [Appendix C, “Configuring RADIUS and TACACS Servers,”](#) describes how to configure Remote Authentication Dial-In User Service (RADIUS) or Terminal Access Controller Access Control System (TACACS) servers for the HP EFS WAN Accelerator.
- ◆ [Appendix D, “HP EFS WAN Accelerator Ports,”](#) provides a list of default ports, and interactive and secure ports automatically forwarded by the HP EFS WAN Accelerator.

A glossary of terms follows the chapters, and a comprehensive index directs you to areas of particular interest.

Document Conventions

This manual uses the following standard set of typographical conventions to introduce new terms, illustrate screen displays, describe command syntax, and so forth.

Convention	Meaning
<i>italics</i>	Within text, new terms and emphasized words appear in italics.
boldface	Within text, commands, keywords, identifiers (names of classes, objects, constants, events, functions, program variables), environment variables, filenames, Graphical User Interface (GUI) controls, and other similar terms appear in boldface.

Convention	Meaning
Courier	Information displayed on your terminal screen and information that you are instructed to enter appear in a Courier typeface.
KEYSTROKE	Keys that you are to press appear in uppercase letters in Helvetica font.
< >	Within syntax descriptions, values that you specify appear in angle brackets. For example: interface <ipaddress>
[]	Within syntax descriptions, optional keywords or variables appear in brackets. For example: ntp peer <addr> [version <number>]
{ }	Within syntax descriptions, required keywords or variables appear in braces. For example: {delete <filename> upload <filename>}
	Within syntax descriptions, the pipe symbol represents a choice to select one keyword or variable to the left or right of the symbol. (The keyword or variable can be either optional or required.) For example: {delete <filename> upload <filename>}

Hardware and Software Dependencies

The following table summarizes the hardware, software, and operating system requirements for the HP EFS WAN Accelerator CLI.

HP EFS WAN Accelerator Component	Hardware Requirements	Software Requirements Operating System Requirements
HP EFS WAN Accelerator Command-Line Interface	<ul style="list-style-type: none">• An ASCII terminal or emulator that can connect to the serial console (9600 baud, 8 bits, no parity, 1 stop bit, and no flow control). or <ul style="list-style-type: none">• A computer with a Secure Shell (ssh) client that is connected by an IP network to the HP EFS WAN Accelerator Primary interface.	<ul style="list-style-type: none">• Secure Shell (ssh). Free ssh clients include PuTTY for Windows computers, OpenSSH for many Unix and Unix-like operating systems, and Cygwin.

Ethernet Network Compatibility

The HP EFS WAN Accelerator supports the following types of Ethernet networks:

- ◆ Fast Ethernet (IEEE 802.3u 100 BaseTX)
- ◆ Gigabit Ethernet over Copper (IEEE 802.3ab 1000 Base-T)

In-path HP EFS WAN Accelerator appliance ports are Fast Ethernet, Ethernet auto-sensing.

The primary port in the HP EFS WAN Accelerator is 10/100/1000 Mbps auto-sensing. The HP EFS WAN Accelerator supports Jumbo Frames.

The HP EFS WAN Accelerator supports VLAN 802.1q. It does not support the Cisco InterSwitch Link (ISL) protocol.

Antivirus Compatibility

The HP EFS WAN Accelerator has been tested with the following antivirus software with no impact on performance:

- ◆ Network Associates (McAfee) VirusScan 7.0.0 Enterprise on the server
- ◆ Network Associates (McAfee) VirusScan 7.1.0 Enterprise on the server
- ◆ Network Associates (McAfee) VirusScan 7.1.0 Enterprise on the client
- ◆ Symantec (Norton) AntiVirus Corporate Edition 8.1 on the server

The HP EFS WAN Accelerator has been tested with the following antivirus software with a noticeable to moderate impact on performance:

- ◆ F-Secure Anti-Virus 5.43 on the client
- ◆ F-Secure Anti-Virus 5.5 on the server
- ◆ Network Associates (McAfee) NetShield 4.5 on the server
- ◆ Network Associates VirusScan 4.5 for multiplatforms on the client
- ◆ Symantec (Norton) AntiVirus Corporate Edition 8.1 on the client

Additional Resources

This section describes the following resources that supplement the information in this guide:

- ◆ Release notes
- ◆ Related HP documentation
- ◆ Related technical reference books

Related HP Documentation

You can access the complete document set for the HP EFS WAN Accelerator from the *HP StorageWorks EFS WAN Accelerator Documentation Set* CD-ROM:

- ◆ *HP StorageWorks Enterprise File Services WAN Accelerator Installation and Configuration Guide* describes how to install and configure the HP EFS WAN Accelerator.
- ◆ *HP StorageWorks Enterprise File Services WAN Accelerator Management Console User's Guide* describes how to use the HP EFS WAN Accelerator Management Console to administer and monitor your HP system.
- ◆ *HP StorageWorks Enterprise File Services WAN Accelerator Manager User's Guide* describes how to install, configure, and administer a network made up of multiple HP EFS WAN Accelerators using the HP StorageWorks Enterprise File Services WAN Accelerator Manager.

Online Documentation

The HP EFS WAN Accelerator documentation set is periodically updated with new information. To access the most current version of the HP EFS WAN Accelerator documentation and other technical information, consult the HP support site located at <http://www.hp.com>.

Related Reading

To learn more about network storage systems and network administration, consult the following books:

- ◆ *Microsoft Windows 2000 Server Administrator's Companion* by Charlie Russell and Sharon Crawford (Microsoft Press, January 2000)
- ◆ *Common Internet File System (CIFS) Technical Reference* by Storage Networking Industry Association (Storage Networking Industry Association, 2002)

- ◆ *TCP/IP Illustrated, Volume I, The Protocols* by W. R. Stevens (Addison-Wesley, 1994)
- ◆ *Internet Routing Architectures (2nd Edition)* by Bassam Halabi (Cisco Press, 2000)

Contacting HP

This section describes how to contact HP.

NOTE: Do not load any other software on your HP StorageWorks EFS WAN Accelerator, as doing so will void your support agreement and you will not be able to receive HP technical support.

Technical Support

Telephone numbers for worldwide technical support are listed on the following HP web site: <http://www.hp.com/support>. From this web site, select the country of origin. For example, the North American technical support number is 800-633-3600.

NOTE: For continuous quality improvement, calls may be recorded or monitored.

Be sure to have the following information available before calling:

- ◆ Technical support registration number (if applicable)
- ◆ Product serial numbers
- ◆ Product model names and numbers
- ◆ Applicable error messages
- ◆ Operating system type and revision level
- ◆ Detailed, specific questions

HP Storage Web Site

The HP web site has the latest information on this product, as well as the latest drivers. Access the storage site at: <http://www.hp.com/country/us/eng/prodserv/storage.html>. From this web site, select the appropriate product or solution.

HP NAS Services Web Site

The HP NAS Services site allows you to choose from convenient HP Care Pack Services packages or implement a custom support solution delivered by HP ProLiant Storage Server specialists and/or our certified service partners. For more information see us at http://www.hp.com/hps/storage/ns_nas.html.

CHAPTER 1

Using the Command-Line Interface

In This Chapter

This chapter describes how to access and use the HP EFS WAN Accelerator command-line interface (CLI). This chapter includes the following sections:

- ◆ [“Connecting to the Command-Line Interface,”](#) next
- ◆ [“Overview of the Command-Line Interface”](#) on page 18
- ◆ [“Entering Commands”](#) on page 19
- ◆ [“Accessing Online Help”](#) on page 19
- ◆ [“Error Messages”](#) on page 20
- ◆ [“Command Negation”](#) on page 20
- ◆ [“Saving Configuration Changes”](#) on page 20

Connecting to the Command-Line Interface

This section assumes you have already performed the initial setup of the HP EFS WAN Accelerator using the configuration wizard.

To connect the CLI

1. You can connect to the CLI using one of the following options:
 - ◆ An ASCII terminal or emulator that can connect to the serial console. It must have the following settings: 9600 baud, 8 bits, no parity, 1 stop bit, and no flow control.
 - ◆ A computer with a Secure Shell (**ssh**) client that is connected to the HP EFS WAN Accelerator Primary port (in some cases, you might connect through the Auxiliary port).

2. At the system prompt, enter the following command:

```
ssh admin@host.domain
```

or

```
ssh admin@ipaddress
```

3. You are prompted for the administrator password. This is the password you set during the initial configuration process. (The default password is **password**.)

You can also log in as a monitor user (**monitor**). Monitor users cannot make configuration changes to the system. Monitor users can view connected HP EFS WAN Accelerators, and performance and system reports.

Overview of the Command-Line Interface

The HP EFS WAN Accelerator CLI is divided into the following modes:

- ◆ **User.** When you start a CLI session, you begin in the default, user-mode. From the user-mode you can run common network tests such as **ping**. You do not enter a command to enter this mode. To exit this mode, enter **exit** at the command line.
- ◆ **Enable.** To access all commands, you must enter enable-mode. From enable-mode, you can enter any enable command or enter configuration mode. You must be an administrator user to enter enable-mode.

NOTE: You cannot enter enable-mode if you are a monitor user. For detailed information about administrator and monitor users, see the *HP StorageWorks Enterprise File Services WAN Accelerator Management Console User's Guide*.

- ◆ **Configuration.** Using the configuration-mode, you can make changes to the running configuration. If you save the configuration, these commands are stored when the system reboots. To enter configuration-mode, you must first be in enable-mode. To exit this mode, enter **exit** at the command line.

The commands available to you depend on which mode you are in. Entering a question mark (?) at the system prompt provides a list of commands for each command mode.

Mode	Access Method	System Prompt	Exit Method	Description
user	Each CLI session begins in user mode.	host >	exit	<ul style="list-style-type: none">• Perform common network tests such as ping.
enable	Enter the enable command at the system prompt while in user mode.	host #	disable no enable Note: To exit the system, enter the exit command.	<ul style="list-style-type: none">• Restart and reboot the system.• Display system information.• Verify configuration information.
configuration	Enter the configure terminal command at the system prompt while in privileged mode.	host (config) #	exit	<ul style="list-style-type: none">• Configure system parameters.

Entering Commands

The CLI accepts abbreviations for commands. The following example is the abbreviation for the **configure terminal** command:

```
tilden (config)# configure t
```

You can also press TAB to complete a CLI command automatically.

Accessing Online Help

At the system prompt, type the full or partial command string followed by a question mark (?). The CLI displays the command keywords or parameters for the command, and a short description.

To access online help

- At the system prompt enter the following command:

```
tilden (config) # show ?
```

The CLI does not display the question mark.

Error Messages

If at any time the system does not recognize the command or parameter, it displays the following message:

```
tilden (config) # logging files enable
% Unrecognized command "enable".
Type "logging files ?" for help.
```

If a command is incomplete, the following message is displayed:

```
tilden (config) # logging
% Incomplete command.
Type "logging ?" for help.
```

Command Negation

You can type the **no** command before many of the commands to negate the syntax. Depending on the command or the parameters, command negation disables the command or returns the parameter to the default value.

Saving Configuration Changes

The **show running config** command displays the current configuration of the system. When you make a configuration change to the system, the change becomes part of the running configuration.

The change does not automatically become part of the configuration file in memory until you write the file to memory. If you do not save your changes to memory, they are lost when the system restarts.

To save all configuration changes to memory, you must enter the **write memory** command in privileged mode.

CHAPTER 2

User-Mode Commands

In This Chapter

This chapter is a reference for user-mode commands. User-mode commands allow you to enter enable-mode and perform standard network monitoring utilities.

This chapter describes the following user-mode commands:

- ◆ [“enable” on page 21](#)
- ◆ [“exit” on page 21](#)
- ◆ [“ping” on page 22](#)
- ◆ [“tcpdump” on page 22](#)
- ◆ [“tproxytrace” on page 23](#)
- ◆ [“traceroute” on page 23](#)

enable

Description Enters enable-mode.

Syntax `enable`

Parameters None

Example

```
minna > enable
minna #
```

exit

Description Exits the CLI when in non-enable-mode; exits enable-mode when in enable-mode; exits configuration-mode when in configuration-mode.

Syntax `exit`

Parameters None

Example

```
minna (config) # exit
minna #
```

ping

Description Executes the HP EFS WAN Accelerator **ping** utility, to send ICMP ECHO_REQUEST packets to network hosts for troubleshooting. The HP EFS WAN Accelerator **ping** command takes the standard Linux options. For detailed information see the manual (**man**) page.

For example, to check your connections:

```
ping -I <appliance-IP-address>
<primary-default-gateway>
```

Syntax **ping** [<options>]

Parameters

<options>	The following options are supported: [-L RUBdfnqrvVaA] [-c count] [-i interval] [-w deadline] [-p pattern] [-s packetsize]. [-t ttl] [-I interface or address] For example: ping -I <primary-IP-address> <primary-default-gateway> [-M mtu discovery hint] [-S sndbuf] [-T timestamp option] [-Q tos] [hop1 ...]destination Specify intermediate hops.
-----------	--

Example

```
minna # ping minna
PING minna.domain.com (10.0.0.3) 56(84) bytes of data.
64 bytes from minna.domain.com (10.0.0.3): icmp_seq=1 ttl=64 time=0.038
ms
64 bytes from minna.domain.com (10.0.0.3): icmp_seq=2 ttl=64 time=0.024
ms
```

tcpdump

Description Executes the **tcpdump** utility. The **tcpdump** command takes the standard Linux options. For detailed information, see the manual (**man**) page.

TIP: You can write **tcpdump** to a file using the **-w** option so that you can analyze them.

Syntax **tcpdump** [<options>]

Parameters

<options>	The tcpdump command takes the standard Linux options. For detailed information see the manual (man) page.
------------------------	---

Example

```
minna # tcpdump
tcpdump: listening on primary
18:59:13.682568 minna.domain.com.ssh > dhcp-22.domain.com.3277: P
3290808290:3290808342(52) ack 3412262693 win 5840 (DF) [dscp 0x10]
18:59:13.692513 minna.domain.com.ssh > dhcp-22.domain.com.3277: P
0:52(52) ack 1 win 5840 (DF) [dscp 0x10]
18:59:13.702482 minna.domain.com.ssh > dhcp-22.domain.com.3277: P
0:52(52) ack 1 win 5840 (DF) [dscp 0x10]
```

tproxytrace

Description Describes the HP EFS WAN Accelerator path in real time.

Syntax **tproxytrace** [**<options>**]

Parameters

<options>	The tproxytrace command takes the following options:
------------------------	---

- h (help).** Print this help text.
- i (iface).** Use this interface to send probes on.
- d (depth).** Probe to this depth of proxies.
- s (source).** Use this source ip address for probes.
- t (timeout).** Milliseconds per depth to listen for probe responses.

Example

```
minna # tproxytrace 10.0.0.3:22
Probe from 10.0.0.3 (primary) to 10.0.0.3:22
depth 1 timed out
```

traceroute

Description Executes the **traceroute** utility. The **traceroute** command takes the standard Linux options. For detailed information see the manual (**man**) page.

Syntax **traceroute** [**<options>**]

Parameters

<options>	The traceroute command takes the standard Linux options. For detailed information see the manual (man) page.
------------------------	--

Example

```
minna # traceroute minna
traceroute to minna.domain.com (10.0.0.3), 30 hops max, 38 byte packets
1 minna (10.0.0.3) 0.035 ms 0.021 ms 0.013 ms
```

CHAPTER 3

Enable-Mode Commands

In This Chapter

This chapter is a reference for enable-mode commands. Enable-mode commands are commands that display process information.

To enter enable-mode

1. Connect to the CLI. For detailed information, see [“Connecting to the Command-Line Interface” on page 17](#).
2. To enter enable-mode, at the system prompt enter:

```
adeline> enable
```

To exit enable-mode, enter `exit`. For information about the `exit` command, see [“exit” on page 21](#).

This chapter describes the following enable-mode commands:

- ◆ [“configure terminal” on page 27](#)
- ◆ [“disable” on page 27](#)
- ◆ [“file debug-dump” on page 27](#)
- ◆ [“file stats” on page 28](#)
- ◆ [“reload” on page 28](#)
- ◆ [“restart” on page 29](#)
- ◆ [“show arp” on page 29](#)
- ◆ [“show authentication method” on page 29](#)
- ◆ [“show bootvar” on page 30](#)
- ◆ [“show cli” on page 30](#)
- ◆ [“show clock” on page 30](#)
- ◆ [“show configuration” on page 31](#)
- ◆ [“show configuration files” on page 31](#)
- ◆ [“show configuration full” on page 32](#)
- ◆ [“show configuration running” on page 32](#)
- ◆ [“show connections” on page 32](#)
- ◆ [“show duplex” on page 33](#)

- ◆ “show email” on page 33
- ◆ “show failover” on page 33
- ◆ “show files debug-dump” on page 34
- ◆ “show files stats” on page 34
- ◆ “show files tcpdump” on page 34
- ◆ “show hosts” on page 34
- ◆ “show images” on page 35
- ◆ “show info” on page 35
- ◆ “show in-path” on page 35
- ◆ “show in-path rules” on page 36
- ◆ “show interfaces” on page 36
- ◆ “show ip” on page 37
- ◆ “show licenses” on page 38
- ◆ “show limit bandwidth” on page 38
- ◆ “show log” on page 39
- ◆ “show logging” on page 39
- ◆ “show ntp” on page 40
- ◆ “show out-of-path” on page 40
- ◆ “show peers” on page 40
- ◆ “show protocol cifs” on page 40
- ◆ “show protocol mapi” on page 41
- ◆ “show qos” on page 41
- ◆ “show radius” on page 41
- ◆ “show raid diagram” on page 41
- ◆ “show raid error-msg” on page 42
- ◆ “show running-config” on page 42
- ◆ “show service” on page 42
- ◆ “show service authentication” on page 42
- ◆ “show snmp” on page 43
- ◆ “show ssh server” on page 43
- ◆ “show stats” on page 43
- ◆ “show tacacs” on page 44
- ◆ “show terminal” on page 44
- ◆ “show usernames” on page 45
- ◆ “show version” on page 45
- ◆ “show web” on page 45

- ◆ “slogin” on page 46
- ◆ “stats export” on page 46

configure terminal

Description	Enables configuration from the terminal by entering the configuration subsystem. To exit the configuration subsystem, type <code>exit</code> . The <code>no</code> configure-command option disables the option.
Syntax	<code>configure terminal</code>
Parameters	None
Example	<pre>minna # configure terminal minna (config) #</pre>

disable

Description	Exits privileged-mode.
Syntax	<code>disable</code>
Parameters	None
Example	<pre>minna # disable minna ></pre>

file debug-dump

Description	Manipulates debug dump files.
Syntax	<code>file debug-dump {delete <filename> email <filename> upload <filename> <URL>}</code>

Parameters

delete <filename>	Specifies the system dump file to delete.
email <filename>	Specifies the system dump file to email.
upload <filename> <URL>	Specifies the system dump file to upload.

Example	<pre>minna #file debug-dump delete sysdump-minna-20040302-234632.tgz minna #</pre>
----------------	--

file stats

Description Moves, deletes, or uploads HP EFS WAN Accelerator performance statistics in a comma separated value (CSV) file. You must export the performance statistics using the **export stats** command.

Syntax **file stats move** <source filename> <destination filename> |
delete <filename> |
upload <filename> <URL>

Parameters

move <source filename> <destination filename>	Specifies the source file to move and the destination file. The following performance statistics are available: CPU statistics, memory utilization, memory paging, and bandwidth statistics.
delete <filename>	Specifies the statistics file to delete.
upload <filename> <URL>	Specifies the statistics file to upload and the destination in URL format. The URL format is: scp://login:password@host/path.

Example

```
minna # file stats delete cpu.csv
minna #
```

reload

Description Reboots the HP EFS WAN Accelerator. If the **clean** option is specified, the data store is cleared before reboot occurs.

Syntax **reload clean** [halt] | **halt** | **force**

Parameters

clean [halt]	Clears the data store and reboots or shuts down the system. The reload clean halt command clears the data store and shuts down the system.
halt	Shuts down the system.
force	Clears the data store, then reboots or shuts down the system

Example

```
minna # reload
```

The session will close. It takes about 2-3 minutes to reboot the appliance.

restart

Description Restarts the HP EFS WAN Accelerator service. If the **clean** option is specified, the data store is cleared before restart occurs.

Syntax `restart [clean]`

Parameters

clean	Empties the data store before rebooting the appliance.
--------------	--

Example

```
minna # restart
Terminating the process....
Relaunching the process.
```

show arp

Description Displays the contents of the Address Resolution Protocol (ARP) cache. This contains all of the statically-configured ARP entries, as well as any that the system has picked up at dynamically.

Syntax `show arp [static]`

Parameters

static	Displays static ARP addresses.
---------------	--------------------------------

Example

```
minna # show arp
ARP cache contents
IP 10.0.0.1 maps to MAC 00:07:E9:70:20:15
IP 10.0.0.2 maps to MAC 00:05:5D:36:CB:29
IP 10.0.100.22 maps to MAC 00:07:E9:55:10:09
```

show authentication method

Description Displays the list of authentication methods used for log ins.

Syntax `show authentication method`

Parameters None

Example

```
minna # show authentication method
```

show bootvar

Description	Displays the software image that is booted upon the next reboot.
Syntax	show bootvar
Parameters	None
Example	<pre>minna # show bootvar Installed images: Partition 1: rbtsh/linux columbia #1 2004-02-07 19:24:24 root@releng:CVS_TMS/HEAD Partition 2: rbtsh/linux Columbia #2 2004-02-13 17:30:17 root@releng:CVS_TMS/HEAD Last boot partition: 1 Next boot partition: 1</pre>

show cli

Description	Displays current CLI settings.
Syntax	show cli
Parameters	None
Example	<pre>minna # show cli Current inactivity timeout is 15 minutes</pre>

show clock

Description	Displays current date and time.
Syntax	show clock
Parameters	None
Example	<pre>minna # show clock Time: 19:31:43 Date: 2003/12/22 Zone: GMT-offset GMT</pre>

show configuration

Description Displays the current and saved configuration settings that differ from the default settings.

Syntax `show configuration`

Parameters None

Example

```
minna # show configuration
##
## Network interface configuration
##
no interface aux dhcp
interface aux duplex "auto"
no interface aux shutdown
interface aux speed "auto"
interface primary ip address 10.0.0.3 /16
##
## Routing configuration
##
ip default-gateway "10.0.0.1"
##
## Other IP configuration
##
hostname "minna"
ip domain-list domain.com
ip domain-list domain.com
ip name-server 10.0.0.2
##
## Logging configuration
##
logging local "info"
##
## Process Manager configuration
##
pm process mgmtd launch timeout "4000"
pm process sport shutdown order "0"
pm process statsd shutdown order "0"
##
## Network management configuration
##
## Miscellaneous other settings
```

show configuration files

Description Displays current configuration files.

Syntax `show configuration files [<filename>]`

Parameters

<filename>	Specifies a particular configuration file.
-------------------------	--

Example

```
minna # show configuration files
initial (active)
initial.bak
```

show configuration full

Description Displays all configuration settings, including the default settings.

Syntax `show configuration full`

Parameters None

Example

```
minna # show configuration full
##
## Network interface configuration
##(displays the full configuration)
```

show configuration running

Description Displays running configuration settings. The **show configuration running full** command displays all settings, including default settings.

Syntax `show configuration running [full]`

Parameters

full	Displays complete running configuration settings.
-------------	---

Example

```
minna # show configuration running
##
## Network interface configuration
##(displays running configuration)
```

show connections

Description Displays connections running through the HP EFS WAN Accelerator.

Syntax

```
show connections
sort | {source [ip | port]} | destination [ip | port] |
filter [<ip> | <port>] |
oop [sort [ip or port]] | filter [ip | port]
```

Parameters

sort	Sorts results by IP address or port.
source [ip port] destination [ip port]	Source specifies the client-side HP EFS WAN Accelerator. Destination specifies the server-side HP EFS WAN Accelerator.
filter [<ip> <port>]	Filters results by IP address or port.
oop [sort [ip port] filter [ip port]]	Displays out-of-path connections. Sorts or filters by IP address or port.

Example minna # show connections sort source ip
no connections

show duplex

Description Displays current duplex settings.

Syntax show duplex

Parameters None

Example minna # show duplex

show email

Description Displays current email settings.

Syntax show email

Parameters None

Example minna # show email
Mail hub:
Domain: domain.com (default)
Event emails
Enabled: yes
No recipients configured.
Failure emails
Enabled: yes
No recipients configured.
Autosupport emails
Enabled: yes
Recipient:autosupport@autosupport.domain.com
Mail hub:autosupport.domain.com

show failover

Description Displays current failover device settings.

Syntax show failover

Parameters None

Example minna # show failover
Enabled: no
Master: yes
Local Port: 7820
Buddy IP Address: 0.0.0.0
Buddy Port: 7820
minna #

show files debug-dump

Description Displays HP EFS WAN Accelerator performance statistics in a comma separated value format.

Syntax `show files debug-dump <filename>`

Parameters

<filename>	Specifies the filename.
-------------------------	-------------------------

Example

```
minna # show files debug-dump
minna #
```

show files stats

Description Displays HP EFS WAN Accelerator performance statistics in a comma separated value format.

Syntax `show files stats <filename>`

Parameters

<filename>	Specifies the performance statistics filename. You must first export the performance statistics using the export stats command.
-------------------------	--

Example

```
minna # show files stats
minna #
```

show files tcpdump

Description Displays files saved by the **tcpdump** utility.

Syntax `show files tcpdump`

Parameters None

Example

```
minna # show files tcpdump
minna #
```

show hosts

Description Displays HP EFS WAN Accelerator system hosts.

Syntax `show hosts`

Parameters None

Example

```
minna # show hosts
Hostname: minna
Name server: 10.0.0.2 (configured)
Domain name: domain.com (configured)
Domain name: domain.com (configured)
IP 127.0.0.1 maps to hostname localhost
minna #
```

show images

Description Displays the available software images.

Syntax `show images`

Parameters None

Example

```
minna # show images
Images available to be installed:
webimage.tbz
rbtsh/linux Vancouver #12 2004-07-15 11:54:52 root@ellis:CVS_TMS/HEAD
image.img
rbtsh/linux 1.0 #17 2004-04-29 16:39:32 root@gilman:CVS_TMS/HEAD
Installed images:
Partition 1:
rbtsh/linux flamebox-HEAD-2004-07-15-07:19:19 #0 2004-07-15 07:19:19
root@gilman:CVS_TMS/HEAD
Partition 2:
rbtsh/linux Vancouver #12 2004-07-15 11:54:52 root@ellis:CVS_TMS/HEAD
Last boot partition: 2
Next boot partition: 2
```

show info

Description Displays the system status, including the running state of the HP EFS WAN Accelerator.

Syntax `show info`

Parameters None

Example

```
minna # show info
Status:           Healthy
Config:           initial
Appliance Up Time: 8d 21h 35m 50s
Service Up Time:  18h 16m 40s
Serial:           00E08128132B
Model:            510
Version:          columbia.1
minna #
```

show in-path

Description Displays current in-path configuration settings.

Syntax `show in-path`

Parameters None

Example

```
minna # show in-path
Enabled:          yes
Kickoff:          no
VLAN ID:          0
Client-Side OOP: no
minna #
```

show in-path rules

Description Displays current in-path rules and Virtual Local Area Network (VLAN) identification numbers.

Syntax **show in-path rules**

Parameters None

Example

Rule	Type	Source Addr	Dest Addr	Port	Target Addr	Port
1	fixd	*	*	*	10.0.0.73	7810
VLAN: 26						
def	auto	*	*	*	--	--
Pass Through Secure Ports: yes						
Pass Through Interactive Ports: yes						

show interfaces

Description Displays the running state settings (which might be different due to Dynamic Host Configuration Protocol (DHCP)) and statistics.

Syntax **show interfaces** [<intname>] | [**brief** | **configured**]

Parameters

<intname>	Specifies the name of the interface.
brief	Displays the running state settings without statistics.
configured	Displays configured settings for the interface.

Example

```
minna # show interfaces
Interface lo state
Up:          yes
IP address:  127.0.0.1
Netmask:     255.0.0.0
Speed:
Duplex:
Interface type:  loopback
MTU:          16436
HW address:
RX bytes:     656
RX packets:   12
RX mcast packets: 0
RX discards:  0
RX errors:    0
RX overruns:  0
```

```

RX frame:          0
TX bytes:          656
TX packets:        12
TX discards:       0
TX errors:         0
TX overruns:       0
TX carrier:        0
TX collisions:     0
Interface primary state
Up:                yes
IP address:        10.0.0.3
Netmask:           255.255.0.0
Speed:             100Mb/s (auto)
Duplex:            full (auto)
Interface type:    ethernet
MTU:               1500
HW address:        00:E0:81:52:0E:20
RX bytes:          576490
RX packets:        7454
RX mcast packets:  0
RX discards:       0
RX errors:         0
RX overruns:       0
RX frame:          0
TX bytes:          63464
TX packets:        559
TX discards:       0
TX errors:         0
TX overruns:       0
TX carrier:        0
TX collisions:     0
Interface aux state
Up:                yes
IP address:
Netmask:
Speed:             UNKNOWN
Duplex:            UNKNOWN
Interface type:    ethernet
MTU:               1500
HW address:        00:E0:81:52:0E:21
RX bytes:          0
RX packets:        0
RX mcast packets:  0
RX discards:       0
RX errors:         0
RX overruns:       0
RX frame:          0
TX bytes:          0
TX packets:        0
TX discards:       0
TX errors:         0
TX overruns:       0
TX carrier:        0
TX collisions:     0

```

show ip

Description Displays IP settings such as host name, Domain Name Service (DNS), and static route.

Syntax

```
show ip {
default gateway [static] |
route [static] |
wan-gateway |
in-path-gateway [static]}
```

Parameters

default gateway [static]	Displays the default gateway or static default gateway.
route [static]	Displays the IP route or IP static route.
wan-gateway	Displays the Wide Area Network (WAN) gateway.
in-path-gateway	Displays the in-path (WAN) gateway.

Example

```
minna # show ip route
Destination      Mask            Gateway
10.0.0.0         255.255.0.0    0.0.0.0
default         0.0.0.0        10.0.0.1
minna #
```

show licenses

Description Displays active licenses.

Syntax `show licenses`

Parameters None

Example

```
minna # show licenses
XXX-XXXXXX-XXXX-XXXX-X-XXXX-XXXX-XXXX
Feature:    SH10BASE
Valid:      yes
Active:     yes
Start date:
End date:
XXX-XXXXXX-XXXX-XXXX-X-XXXX-XXXX-XXXX
Feature:    SH10CIFS
Valid:      yes
Active:     yes
Start date:
End date:
XXX-XXXXXX-XXXX-XXXX-X-XXXX-XXXX-XXXX
Feature:    SH10EXCH
Valid:      yes
Active:     yes
Start date:
End date:
```

show limit bandwidth

Description Displays current bandwidth threshold settings.

Syntax `show limit bandwidth`

Parameters None

Example

```
minna # show limit bandwidth
Bandwidth Limit Disabled
minna #
```

show log

Description Displays system logs.

Syntax `show log [continuous | files <log number>]`

Parameters

continuous	Continuously displays the log, similar to the tail -f command.
files <log number>	Displays a list of log files or a specific log file.

Example

```
minna # show log
Dec 22 20:00:00 localhost /usr/sbin/crond[784]: (root) CMD (/usr/sbin/
logrotate /etc/logrotate.conf)
Dec 22 20:00:00 localhost cli[555]: [cli.INFO]: user admin: CLI got
signal 2 (SIGINT)
Dec 22 20:02:31 localhost cli[555]: [cli.INFO]: user admin: Executing
command: show ip route
Dec 22 20:02:38 localhost cli[555]: [cli.INFO]: user admin: CLI got
signal 2 (SIGINT)
Dec 22 20:03:16 localhost cli[555]: [cli.INFO]: user admin: CLI got
signal 2 (SIGINT)
Dec 22 20:04:00 localhost cli[555]: [cli.INFO]: user admin: Executing
command: show ip route static
Dec 22 20:05:02 localhost cli[555]: [cli.INFO]: user admin: Executing
command: show licenses
Dec 22 20:05:09 localhost cli[555]: [cli.INFO]: user admin: CLI got
signal 2 (SIGINT)
Dec 22 20:06:44 localhost cli[555]: [cli.INFO]: user admin: Executing
command: show limit bandwidth
Dec 22 20:06:49 localhost cli[555]: [cli.INFO]: user admin: CLI got
signal 2 (SIGINT)
Dec 22 20:07:12 localhost cli[555]: [cli.INFO]: user admin: Executing
command: show log
```

show logging

Description Displays log settings.

Syntax `show logging`

Parameters None

Example

```
minna # show logging
Local logging level: info
Default remote logging level: info
No remote syslog receivers configured.
Number of archived log files to keep: 10
Log rotation frequency: daily
minna #
```

show ntp

Description	Displays Network Time Protocol (NTP) information.
Syntax	show ntp
Parameters	None
Example	<pre>minna # show ntp NTP enabled: yes No NTP peers configured. NTP server: 192.6.38.127 (version 4) NTP server: 66.187.224.4 (version 4) NTP server: 66.187.233.4 (version 4)</pre>

show out-of-path

Description	Displays current out-of path configuration settings.
Syntax	show out-of-path
Parameters	None
Example	<pre>minna # show out-of-path Enabled: no Inner Port: 7810</pre>

show peers

Description	Displays connected HP EFS WAN Accelerators.
Syntax	show peers
Parameters	None
Example	<pre>minna # show peers No connected appliances.</pre>

show protocol cifs

Description	Displays the CIFS protocol settings.
Syntax	show protocol cifs
Parameters	None
Example	<pre>minna # show protocol cifs Enable transparent Prepopulation Support: no before the write opt one Disable CIFS Optimization: no</pre>

show protocol mapi

Description	Displays the Mail API (MAPI) prepopulation settings.
Syntax	show protocol mapi
Parameters	None
Example	<pre>minna # show protocol mapi Incoming MAPI port: 7830</pre>

show qos

Description	Displays Quality of Service (QoS) settings.
Syntax	show qos
Parameters	None
Example	<pre>minna # show qos No quality of service settings.</pre>

show radius

Description	Displays RADIUS configuration settings.
Syntax	show radius
Parameters	None
Example	<pre>minna # show radius No radius settings.</pre>

show raid diagram

Description	Displays the physical layout of the RAID (Redundant Array of Independent Disks) disks.
Syntax	show raid diagram
Parameters	None
Example	<pre>minna # show raid diagram DL380-3010 layout: [=====] [=====] [3] [1] [=====] [=====] ----- [=====] [=====] [2] [0] [=====] [=====]</pre>

show raid error-msg

Description	Displays the RAID disk drives that are not functioning.
Syntax	show raid error-msg
Parameters	None
Example	<pre>minna # show raid error-msg</pre>

show running-config

Description	Displays the running configuration. The show running-config full command displays all settings, even those that are set to the default value.
Syntax	show running-config [full]
Parameters	None
Example	<pre>minna # show running-config (displays running configuration)</pre>

show service

Description	Displays current state of the HP EFS WAN Accelerator service.
Syntax	show service
Parameters	None
Example	<pre>minna # show service Service: Running</pre>

show service authentication

Description	Displays current client and server authentication settings.
Syntax	show service authentication
Parameters	None
Example	<pre>minna # show service authentication Authentication Service: Not Enabled</pre>

show snmp

Description	Displays current Simple Network Management Protocol (SNMP) server settings.
Syntax	show snmp
Parameters	None
Example	<pre>minna # show snmp SNMP enabled: yes System location: System contact: Read-only community: public Traps enabled: yes No trap sinks configured.</pre>

show ssh server

Description	Displays the server settings.
Syntax	show ssh server
Parameters	None
Example	<pre>minna # show ssh server SSH server enabled: yes</pre>

show stats

Description	Displays statistics.
Syntax	<pre>show stats {alarm <type>} [bandwidth all [lan-to-wan wan-to-lan bidirectional] [ports [all <portnumber>] [hour day week month]] [cpu] [memory] [data-reduction [hour day week month]] [traffic [hour day week month]]</pre>

Parameters

alarm <type>	Displays alarm statistics. Specify alarm type or <carriage return>: bypass, cpu_util_ave, paging, raid_error, raid_warning, sw-version.
bandwidth all [lan-to-wan wan-to-lan bidirectional] [ports [all <portnumber> [hour day week month]]]	Displays bandwidth statistics.
cpu	Displays CPU statistics.
memory	Displays memory statistics.
data reduction [hour day week month]	Displays throughput statistics for the last hour, day, week, or month
traffic [hour day week month]	Displays traffic statistics for the last hour, day, week, or month.

Example

```
minna # show stats alarm
Alarm bypass           ok
Alarm cpu_util_ave     ok
Alarm paging           ok
Alarm raid_error       ok
Alarm raid_warning     ok
Alarm sw-version       (no peers connected)
```

show tacacs

Description Displays Terminal Access Controller Access Control System (TACACS+) settings.

Syntax **show tacacs**

Parameters None

Example

```
minna # show tacacs
No tacacs settings.
```

show terminal

Description Displays terminal settings.

Syntax **show terminal**

Parameters None

Example

```
minna # show terminal
Terminal width: 80 columns
Terminal length: 24 rows
```

show usernames

Description	Displays information about active or configured users.
Syntax	show usernames
Parameters	None
Example	<pre>minna # show usernames admin monitor</pre>

show version

Description	Displays the installed software version including build number.
Syntax	show version [concise]
Parameters	

concise	Displays the installed software version without build information.
----------------	--

Example	<pre>#minna # show version Product name: rbtsh/linux Product release: columbia Build ID: #1 Build date: 2004-02-07 19:24:24 Built by: root@releng</pre>
----------------	---

show web

Description	Displays current web settings.
Syntax	show web
Parameters	None
Example	<pre>minna # show web web-based management console enabled: HTTP enabled: yes HTTP port: 80 HTTPS enabled: yes HTTPS port: 443 Inactivity timeout: 15 minutes Session timeout: 60 minutes Session renewal threshold: 30 minutes</pre>

slogin

Description Enables log in to another HP EFS WAN Accelerator using **ssh**. To view options, enter **slogin** at the system prompt.

Syntax **slogin** [<options>]

Parameters

<options>	To view options, enter slogin at the system prompt.
-----------	--

Example `minna # slogin -l usertest`

stats export

Description Exports HP EFS WAN Accelerator performance statistics in a comma separated value (CSV) file so that you can easily transfer them to spreadsheets and database systems.

Syntax **stats export** {<report name> <filename>}
[after <date> <time> before <date> <time>]

Usage You can view performance report statistics using the **show stats** command:

```
show files stats <filename>
```

You can move, delete, and upload statistics using the following commands:

```
file stats move <source filename> <destination filename>
file stats delete <filename>
file stats upload <filename> <URL>
```


Parameters

<report name> <filename>	<p>Specifies the source file and the destination file. The following performance statistics are available: CPU statistics, memory utilization, memory paging, aggregate bandwidth statistics for the hour, day, week, and month, and port bandwidth statistics for the hour, day, week, and month.</p> <p>If you do not specify a file name, a file name is automatically created: reportname-data-time.csv. If you do not specify the file extension (.csv), it is automatically appended to the new file.</p>
before <date> <time>	<p>Specifies the date and time from which the report should begin. For the date and time, use the following format: yyyy/mm/dd, hh:mm:ss.</p>
after <date> <time>	<p>Specifies the date and time from which the report should end. For the date and time, use the following format: yyyy/mm/dd, hh:mm:ss</p>

Example

```
minna # stats export cpu_util cpureport.csv
```


CHAPTER 4

Configuration-Mode Commands

In This Chapter

This chapter is a reference for configuration-mode commands. Configuration-mode commands set configuration properties for the HP EFS WAN Accelerator.

To use configuration-mode commands, you must first enter enable-mode before you can execute configuration-mode commands.

To enter configuration-mode

1. Connect to the CLI. For detailed information, see [“Connecting to the Command-Line Interface” on page 17](#).

2. To enter enable-mode, at the system prompt enter:

```
adeline> enable
```

3. To enter configuration-mode, at the system prompt enter:

```
adeline # configure terminal
adeline (config) #
```

You are in configuration-mode.

To exit configuration-mode, enter `exit`. For information about the `exit` command, see [“exit” on page 21](#).

This section contains the following configuration-mode commands:

- ◆ [“aaa authentication login default” on page 53](#)
- ◆ [“aaa authorization map default-user” on page 54](#)
- ◆ [“aaa authorization map order” on page 54](#)
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aaa authentication login default

Description Configures Remote Authentication Dial-In User Service (RADIUS) or Terminal Access Controller Access Control System (TACACS+) login settings. The order in which the methods are specified is the order in which the authentication is attempted. The **no** command option clears all authentication states and returns user authentication to the local username database.

Syntax `aaa authentication login default <method>`

Parameters

<method>	Specifies the authentication method: radius , tacacs+ , or local . Use a space separated list.
-----------------------	---

Example

```
minna (config) # aaa authentication login default radius tacacs+
minna (config) #
```

aaa authorization map default-user

Description Sets the local user default mapping for RADIUS or TACACS+ server authentication. When a user is authenticated (via RADIUS or TACACS+) and does not have a local account, this command specifies what local account the authenticated user will be logged in as. If the user name is **local**, this mapping is ignored. This mapping depends on the setting of the **aaa authorization map order** command.

Syntax `aaa authentication login default <user_name>`

Parameters

<user_name>	Specifies the user name for RADIUS or TACACS+ authentication: admin or monitor .
--------------------------	--

Example

```
minna (config) # aaa authorization map default-user admin
minna (config) #
```

aaa authorization map order

Description Sets the order for remote to local user mappings for RADIUS or TACACS+ server authentication.

Syntax `aaa authentication map order <policy>`

Parameters

<policy>	Specifies the order in which to apply the authentication policy: remote-only , remote-first , local-only .
-----------------------	---

Usage Used when authenticating users via RADIUS or TACACS+. The order determines how the remote user mapping behaves. If the authenticated user name is valid locally, no mapping is performed. The setting has the following behaviors:

- ◆ **remote-first.** If a local-user mapping attribute is returned and it is a valid local user name, map the authenticated user to the local user specified in the attribute. If the attribute is not present or not valid locally, use the user specified by the default-user command. (This is the default behavior.)
- ◆ **remote-only.** Map only to a remote authenticated user if the authentication server sends a local-user mapping attribute. If the attribute does not specify a valid local user, no further mapping is attempted.
- ◆ **local-only.** All remote users are mapped to the user specified by the **aaa authorization map default-user <user name>** command. Any vendor attributes received by an authentication server are ignored.

To set TACACS authorization levels (**admin** and **read-only**) to allow certain members of a group to log in, add the following attribute to **users** on the TACACS server:

```
service = rbt-exec {
    local-user-name = "monitor"
}
```

where you replace **monitor** with **admin** for write access. To turn off general authentication in the HP EFS WAN Accelerator, type the following command at the system prompt:

```
aaa authorization map order remote-only
```

Example

```
minna (config) # aaa authorization map order remote-only
minna (config) #
```

arp

Description Creates static Address Resolution Protocol (ARP) entries in the ARP table. The **no** command option disables ARP static entries.

Syntax `arp <addr> <MACaddr>`

Parameters

<addr>	Specifies the IP address of the machine.
<MACaddr>	Specifies the Media Access Control (MAC) address.

Example

```
minna (config) # arp 10.0.0.0 00:07:E9:55:10:09
minna (config) #
```

boot system

Description Boots the specified partition the next time the appliance is rebooted.

Syntax `boot system <partition>`

Parameters

<partition>	Specifies the partition to boot: 1 or 2.
--------------------------	--

Example

```
minna (config) # boot system 1
minna (config) #
```

clear arp-cache

Description Clears dynamic entries in the ARP cache. This does not delete static ARP entries configured with the **arp** command.

Syntax `clear arp-cache`

Parameters None

Example minna (config) # clear arp-cache
 minna (config) #

cli clear-history

Description Clears the command history for the current user.

Syntax cli clear-history

Parameters None

Example minna (config) # cli clear-history
 minna (config) #

cli default paging enable

Description Sets paging so that it is enabled each time you log in. With paging enabled, if there is too much text to fit on the page, the CLI prompts you for the next page of text. The **no** command option disables paging.

Syntax cli default paging enable

Parameters None

Example minna (config) # cli default paging enable
 minna (config) #

cli session

Description Sets CLI options for current session only.

Syntax cli session {auto-logout <minutes> | paging enable | terminal length
 <lines> | type <terminal_type> | width <characters>}

Parameters

auto-logout <minutes>	Sets the number of minutes before the CLI automatically logs out the user. The default value is 15 minutes. The no command option disables the automatic logout feature.
paging enable	With paging enabled, if there is too much text to fit on the page, the CLI prompts you for the next page of text. The no command option disables paging.
terminal length <lines> type <terminal_type> width <characters>	Sets the terminal length. The no command option disables the terminal settings.
type <terminal_type>	Sets the terminal type. The no command option disables the terminal settings.
width <terminal_width>	Sets the terminal width. The no command option disables the terminal settings.

Example

```
minna (config) # cli session auto-logout 20
minna (config) #
```

clock set

Description Sets the system time and date.

Syntax **clock set** {<hh:mm:ss> | <yyyy/mm/dd>}

Parameters

<hh:mm:ss>	Specifies the hour, minutes, and seconds.
<yyyy/mm/dd>	Specifies the year, month, and day.

Example

```
minna (config) # clock set 12:34:55
minna (config) #
```

clock timezone

Description Sets the current time zone. The default value is Greenwich Mean Time (GMT-offset).

Syntax **clock timezone** <zone>

Parameters

<zone>	Specifies the time zone name.
--------	-------------------------------

Example

```
minna (config) # clock timezone GMT
minna (config) #
```

configuration copy

Description Copies a configuration file.

Syntax `configuration copy <sourcename> <new-filename>`

Parameters

<code><sourcename></code>	Specifies the source configuration file.
<code><new-filename></code>	Specifies the new configuration file.

Example

```
minna (config) # configuration copy westcoast eastcoast
minna (config) #
```

configuration delete

Description Deletes a configuration file. For an example of usage, see [“configuration merge” on page 60](#).

Syntax `configuration delete <name>`

Parameters

<code><name></code>	Specifies the name of the configuration file.
---------------------------	---

Example

```
minna (config) # configuration delete westcoast
minna (config) #
```

configuration fetch

Description Downloads a configuration file over the network.

You can avoid copy and paste errors by using the import configuration option when you are replacing or adding an HP EFS WAN Accelerator in your network. Simply connect the replacement HP EFS WAN Accelerator to your LAN and import the configuration from your existing HP EFS WAN Accelerator. If you are swapping one HP EFS WAN Accelerator for another, you can import all of the network information (although not the licenses) and disconnect the old HP EFS WAN Accelerator before you switch configurations on the new appliance.

To deploy a large network of HP EFS WAN Accelerators, you can avoid configuring each appliance individually by setting up a template appliance and using the configuration import option to copy the template to each appliance.

Syntax `configuration fetch <URL or scp://username:password@hostname/path/filename>`

Parameters

<URL or scp:// username:password@host name/path/filename>	Specifies the location of the configuration file to download. To copy a configuration file from another HP EFS WAN Accelerator, use the following format: scp://admin:password@other-appliance/ config/db/configuration-file
--	--

Usage

To copy one configuration file to another HP EFS WAN Accelerator, run the following set of commands:

```
configuration fetch <url-to-remote-config> <new-config-name>
;; this fetches the configuration from the remote
configuration switch-to <new-config-name>
;; this activates the newly fetched configuration
```

Example

```
minna (config) # configuration fetch http://domain.com/westcoast
newconfig
minna (config) #configuration switch-to newconfig
```

configuration jump-start

Description

Reruns the configuration wizard.

Syntax

configuration jump-start

Parameters

None

Example

```
minna (config) # configuration jump-start
Configuration wizard.
Step 1: Hostname? [telegraph]
Step 2: Use DHCP? [no]
Step 3: Primary IP address? [10.0.0.74]
Step 4: Netmask? [255.255.0.0]
Step 5: Default gateway? [10.0.0.1]
Step 6: Primary DNS server? [10.0.0.2]
Step 7: Domain name? [domain.com]"
Step 8: Admin password?
Step 9: Copy config from another site? [no]
Step 10: Set the primary interface speed? [auto]
Step 11: Set the primary interface duplex? [auto]
Step 12: Would you like to activate the in-path configuration? [no] y
Step 13: In-Path IP address? [0.0.0.0]
Step 14: In-Path Netmask? [0.0.0.0] 255.255.0.0
Step 15: In-Path Default gateway? [0.0.0.1]
Step 16: Set the in-path:LAN interface speed? [auto]
Step 17: Set the in-path:LAN interface duplex? [auto]
Step 18: Set the in-path:WAN interface speed? [auto]
Step 19: Set the in-path:WAN interface duplex? [auto]
You have entered the following information:
1. Hostname: minna
2. Use DHCP: no
3. Primary IP address: 10.0.0.74
4. Netmask: 255.255.0.0
5. Default gateway: 10.0.0.1
6. Primary DNS server: 10.0.0.2
```

```

7. Domain name: domain.com
8. Admin password: (unchanged)
9. Copy config from another site: no
10. Set the primary interface speed: auto
11. Set the primary interface duplex: auto
12. Would you like to activate the in-path configuration: yes
13. In-Path IP address: 0.0.0.0
14. In-Path Netmask: 255.255.0.0
15. In-Path Default gateway: 0.0.0.1
16. Set the in-path:LAN interface speed: auto
17. Set the in-path:LAN interface duplex: auto
18. Set the in-path:WAN interface speed: auto
19. Set the in-path:WAN interface duplex: auto
To change an answer, enter the step number to return to.
Otherwise hit <enter> to save changes and exit.
Choice:

```

configuration merge

Description Merges common configuration settings from one HP EFS WAN Accelerator to another. Use this command to deploy a network of appliances. Set up a template appliance and merge the template with each appliance in the network.

The following configuration settings are not merged when you run the **configuration merge** command: failover settings, SNMP SysContact and SysLocation, log settings, and all network settings (for example, host name, auxiliary interface, DNS settings, defined hosts, static routing, and in-path routing).

The following configuration settings are merged when you run the **configuration merge** command: in-path, out-of-path, protocols, statistics, CLI, email, NTP and time, web, SNMP, and alarm.

Syntax **configuration merge** <new-config-name>

Parameters

<new-config-name>	Specifies the new configuration name.
--------------------------------	---------------------------------------

Usage To merge a configuration file, run the following set of commands:

```

configuration write to <new-config-name>
    ;; this saves the current config to the new name and activates
    ;; the new configuration
configuration fetch <url-to-remote-config> <temp-config-name>
    ;; this fetches the configuration from the remote
configuration merge <temp-config-name>
    ;; this merges the fetched config into the active configuration
    ;; which is the newly named/created one in step 1 above
configuration delete <temp-config-name>
    ;; this deletes the fetched configuration as it is no longer
    ;; needed since you merged it into the active configuration

```

Example

```
minna (config) # configuration write to newconfig
minna (config) #configuration fetch http://domain.com/remotefconfig
tempconfig
minna (config) #configuration merge tempconfig
minna (config) #configuration delete tempconfig
minna (config) #
```

configuration move

Description

Moves and renames a configuration file.

Syntax

configuration move <sourcename> <destname>

Parameters

<sourcename>	Specifies the name of the source configuration file.
<destname>	Specifies the name of the new configuration file.

Example

```
minna (config) # configuration move westcoast eastcoast
minna (config) #
```

configuration new

Description

Creates a new, blank configuration file.

WARNING: HP recommends that you use the **keep licenses** command option. If you do not keep licenses, your new configuration will not have a valid license key.

Syntax

configuration new {<new-filename> [**keep licenses**]}

Parameters

<new-filename>	Specifies the name of the new configuration file.
keep licenses	Create a new configuration file with default settings and active licenses.

Example

```
minna (config) # configuration new westcoast
minna (config) #
```

configuration revert saved

Description

Reverts active configuration to the last saved configuration.

Syntax

configuration revert saved

Parameters

None

Example

```
minna (config) # configuration revert saved
minna (config) #
```

configuration switch-to

Description Loads a new configuration file and makes it the active configuration. For an example of usage, see [“configuration merge” on page 60](#).

Syntax `configuration switch-to {<filename> | initial | initial.bak}`

Parameters

<filename>	Specifies the name of the new configuration file.
initial	Specifies the initial configuration.
initial.bak	Specifies the initial backup configuration.

Example

```
minna (config) # configuration switch-to westcoast
minna (config) #
```

configuration write

Description Writes the current, active configuration file to memory.

Syntax `configuration write [to <filename>]`

Parameters

to <filename>	Save the running configuration to a file and make it active.
----------------------------	--

Example

```
minna (config) # configuration write
minna (config) #
```

datastore notification

Description Enables automatic email notification. You are notified when all the data in the data store is replaced with new data in less time than you specify. The **no** command option disables email notification.

Syntax `datastore notification enable [wrap-around <days>]`

Parameters

enable	Enables automatic email notification when all the data in the data store is replaced with new data in less time than you specify.
wrap-around <days>	Specifies the number of days to elapse before sending an email message notifying you that the data in the data store has been replaced.

Example

```
minna (config) # datastore notification enable wrap-around 2
minna (config) #
```

datastore receive

Description Receives the data store from another HP EFS WAN Accelerator.

Syntax `datastore receive port <port_number>`

Parameters

<port_number>	Specifies the port number.
----------------------------	----------------------------

Example

```
minna (config) # datastore receive port 1234
minna (config) #
```

datastore send

Description Sends the data store to another HP EFS WAN Accelerator.

Syntax `datastore send <addr> <port>`

Parameters

<addr> <port>	Specifies the IP address and port of the HP EFS WAN Accelerator.
----------------------------------	--

Example

```
minna (config) # datastore send 10.0.0.03
minna (config) #
```

duplex auto-correction allowed-changes

Description Sets the number of allowed automatic duplex changes settings. If a duplex mismatch is detected, the HP EFS WAN Accelerator cycles through different duplex settings for the interface, selecting the best configuration. After a duplex mismatch has been detected, a log message is recorded and email is sent.

Syntax `duplex auto-correction allowed-changes <number>`

Parameters

<number>	Specifies the number of times to change duplex settings.
-----------------------	--

Example

```
minna (config) # duplex auto-correction allowed-changes 5
minna (config) #
```

duplex auto-correction enable

Description	Enables automatic duplex correction. If a duplex mismatch is detected, the HP EFS WAN Accelerator cycles through duplex settings for the interface, selecting the best configuration. After a duplex mismatch has been detected, a log message is recorded and email is sent. The automatic correction feature functions only when the HP EFS WAN Accelerator is set at auto or full duplex. The no command option disables the duplex correction feature.
Syntax	duplex auto-correction enable
Parameters	None
Example	<pre>minna (config) # duplex auto-correction enable minna (config) #</pre>

duplex auto-correction error-threshold

Description	Sets the number of allowed automatic duplex changes settings. If a duplex mismatch is detected, the HP EFS WAN Accelerator cycles through duplex settings for the interface, selecting the best configuration. After a duplex mismatch is detected, a log message is recorded and email is sent.				
Syntax	duplex auto-correction error-threshold <interface> <allowed_errors>				
Parameters	<table><tr><td><interface></td><td>Specifies the interface upon which to apply duplex automatic correction: primary, aux, lan, wan.</td></tr><tr><td><allowed_errors></td><td>Specifies the number of allowed duplex errors for the interface. The default value is 5.</td></tr></table>	<interface>	Specifies the interface upon which to apply duplex automatic correction: primary , aux , lan , wan .	<allowed_errors>	Specifies the number of allowed duplex errors for the interface. The default value is 5.
<interface>	Specifies the interface upon which to apply duplex automatic correction: primary , aux , lan , wan .				
<allowed_errors>	Specifies the number of allowed duplex errors for the interface. The default value is 5.				
Example	<pre>minna (config) # duplex auto-correction error-threshold primary 10 minna (config) #</pre>				

duplex email-notify enable

Description	Sets automatic email notification when a duplex correction is made. The no command option disables email notification.
Syntax	duplex email-notify enable
Parameters	None
Example	<pre>minna (config) # duplex email-notify enable minna (config) #</pre>

email domain

Description Specifies the domain for email notifications. Use this command only if the email address does not contain the domain. The **no** command option disables the email domain.

Syntax **email domain** <hostname or IP address>

Parameters

<hostname or IP address>	Specifies the domain for email notifications (only if the email address does not contain it).
---------------------------------------	---

Example

```
minna (config) # email domain example.com
minna (config) #
```

email mailhub

Description Specifies the Simple Mail Transfer Protocol (SMTP) server for email notifications. The **no** command option disables the SMTP server.

Syntax **email mailhub** <host name or IP address>

Parameters

<host name or IP address>	Specifies the SMTP server for email notifications.
--	--

Example

```
minna (config) # email mailhub mail-server.example.com
minna (config) #
```

email notify events enable

Description Enables email notification for events. The **no** command option disables email notification.

Syntax **email notify events enable**

Parameters None

Example

```
minna (config) # email notify events enable
minna (config) #
```

email notify events recipient

Description Enables email notification for events. The **no** command option disables email notification.

Syntax **email notify events recipient** <email addr>

Parameters

<email addr>	Specifies the email address of users to receive notification of events.
---------------------------	---

Example

```
minna (config) # email notify events recipient example@example.com
minna (config) #
```

email notify failures enable

Description Enables email notification of HP EFS WAN Accelerator failures such as core dumps. The **no** command option disables this command.

Syntax **email notify failures**

Parameters None

Example

```
minna (config) # email notify failures enable
minna (config) #
```

email notify failures recipient

Description Enables email notification of HP EFS WAN Accelerator failures such as core dumps. The **no** command option disables this command.

Syntax **email notify failures recipient <email addr>**

Parameters

recipient <email-addr>	Specifies the email address of users to receive notification of failures.
-------------------------------------	---

Example

```
minna (config) # email notify failures recipient example@example.com
minna (config) #
```

email send-test

Description Sends test email to all configured event and failure recipients.

Syntax **email send-test**

Parameters None

Example

```
minna (config) # email send-test
minna (config) #
```

failover buddy addr

Description Sets the buddy (failover) IP address. The buddy machine is the failover (backup) machine. If the master HP EFS WAN Accelerator fails the failover

HP EFS WAN Accelerator takes over. The default value is **0.0.0.0**. The **no** command option resets the buddy IP address to the default value.

Syntax `failover buddy addr <IPaddress>`

Parameters

<IPaddress>	Specifies the IP address for the failover, backup machine. The default value is 0.0.0.0 .
--------------------------	--

Example

```
minna (config) # failover buddy addr 10.10.10.1
minna (config) #
```

failover buddy port

Description Sets the buddy, failover port. The buddy machine that is the failover (backup) machine. If the master HP EFS WAN Accelerator fails the failover HP EFS WAN Accelerator takes over. The default value is **7820**. The **no** command option resets the buddy, failover port to the default value.

Syntax `failover buddy port <port>`

Parameters

<port>	Specifies the port number.
---------------------	----------------------------

Example

```
minna (config) # failover buddy port 2515
minna (config) #
```

failover enable

Enables failover support. Failover support enables a redundant (backup) HP EFS WAN Accelerator so that if the master HP EFS WAN Accelerator fails, the traffic is routed automatically through the failover (failover or buddy) HP EFS WAN Accelerator.

Valid values must exist for the port, buddy address, and buddy port before this command can complete. The **no** command option disables failover support.

Syntax `failover enable`

Parameters None

Example

```
minna (config) # failover enable
minna (config) #
```

failover master

Description	Sets this HP EFS WAN Accelerator as the primary or master appliance. If the master appliance fails, the traffic is routed automatically through the failover (failover or buddy) HP EFS WAN Accelerator. The default value is true . The no command option sets this appliances as the failover (buddy or backup) machine.
Syntax	failover master
Parameters	None
Example	<pre>minna (config) # failover master minna (config) #</pre>

failover port

Description	Sets the local failover port. The failover machine is the buddy (backup) machine. The default value is 7820 . The no command option resets the local failover port to the default value.
Syntax	failover port <port>
Parameters	

<port>	Specifies the port number.
---------------------	----------------------------

Example	<pre>minna (config) # failover port 2515 minna (config) #</pre>
----------------	---

file tcpdump

Description	Deletes or uploads a tcpdump file.
Syntax	file tcpdump {delete <filename> upload <filename> <URL or scp://username:password@hostname/path/filename>}
Parameters	

delete <filename>	Deletes the tcpdump file.
upload <filename> <URL or scp:// username:passwo rd@hostname/ path/filename>	Uploads a tcpdump output file to a remote host.

Example	<pre>minna (config) # file tcpdump delete dumpfile minna (config) #</pre>
----------------	---

hostname

Description Sets the host name for this machine. The **no** command option removes the hostname for this machine.

Syntax **hostname** <hostname>

Parameters

<hostname>	Specifies the host name. Do not include the domain name.
------------	--

Example

```
minna (config) # hostname park
minna (config) #
```

image boot

Description Boots the specified system image by default.

Syntax **image boot** <partition>

Parameters

<partition>	Specifies the partition to boot: 1 or 2.
-------------	--

Example

```
minna (config) # image boot 1
minna (config) #
```

image delete

Description Deletes the specified software image.

Syntax **image delete** <image-filename>

Parameters

<image-filename>	Specifies the software image to delete.
------------------	---

Example

```
minna (config) # image delete snkv1.0
minna (config) #
```

image fetch

Description Downloads a software image from a remote host.

Syntax **image fetch** <URL or scp://username:password@hostname/path/filename>
<image-filename>

Parameters

<URL or scp:// username:password@h ostname/path/ filename>	Specifies the location of the software image. A carriage return downloads the image and gives it the same name it had on the server.
<image-filename>	Specifies the filename under which to store the image locally.

Example

```
minna (config) # image fetch http://www.domain.com/v.1.0 version1.0
minna (config) #
```

image install

Description Installs the software image onto a system partition.

Syntax **image install** <image-filename> <partition>

Parameters

<image-filename>	Specifies the software image filename.
<partition>	Specifies the partition number: 1, 2 .

Example

```
minna (config) # image install version1.0 2
minna (config) #
```

image move

Description Moves or renames an inactive system image on the hard disk.

Syntax **image move** <source-image-name> <new-image-name>

Parameters

<source-image-name>	Specifies the name of the software image to move or rename.
<new-image-name>	Specifies the new name of the software image.

Example

```
minna (config) # image move www.domain.com/v.1.0 version1.0
minna (config) #
```


in-path client-oop enable

Description Enables out-of-path support for Layer-4 switches, Policy Based Routing (PBR), and Web Cache Communication Protocol (WCCP) configurations. An out-of-path configuration is a configuration in which the HP EFS WAN Accelerator is not in the direct path of the client, the Wide Area Network (WAN), and the server. The **no** command option disables client out-of-path support.

IMPORTANT: When you connect to the WAN port on the HP EFS WAN Accelerator for WCCP, the LAN port no longer passes traffic. You cannot run the HP EFS WAN Accelerator in both in-path and client out-of-path mode.

Syntax `in-path client-oop enable`

Parameters None

Example

```
minna (config) # in-path client-oop enable
minna (config) #
```

in-path enable

Description Enables in-path support. An in-path configuration is a configuration in which the HP EFS WAN Accelerator is in the direct path of the client, the WAN, and the server.

Syntax `in-path enable`

Parameters None

Example

```
minna (config) # in-path enable
minna (config) #
```

in-path forward interactive

Enables automatic forwarding of traffic on known interactive ports. For a list of ports that are automatically forwarded, see [“Interactive Ports Automatically Forwarded by the HP EFS WAN Accelerator” on page 134](#). The **no** command option disables in-path forwarding.

Syntax `in-path forward interactive`

Parameters None

Example

```
minna (config) # in-path forward interactive
minna (config) #
```

in-path forward secure

Description Enables automatic forwarding of traffic on known secure ports. For a list of ports that are automatically forwarded, see [“Secure Ports Automatically Forwarded by the HP EFS WAN Accelerator”](#) on page 134. The **no** command option disables in-path forwarding.

Syntax `in-path forward secure`

Parameters None

Example

```
minna (config) # in-path forward secure
minna (config) #
```

in-path interface enable

Description Enables the in-path interface for optimization.

Syntax `in-path interface <interface> enable`

Parameters

<interface>	Specifies the IP address of the in-path interface.
--------------------------	--

Example

```
minna (config) #in-path interface 10.0.0.1 enable
minna (config) #
```

in-path interface vlan tag

Description Enables VLAN support on an in-path HP EFS WAN Accelerator on a trunked link. The in-path interface vlan command enables you to set which VLAN to use when the HP EFS WAN Accelerator communicates with another HP EFS WAN Accelerator. It does not define which VLAN to optimize. To define which VLAN to optimize you must define in-path rules and apply them to all VLANs or a specific VLAN. The **no** command option disables the VLAN support.

Syntax `in-path interface <interface> vlan tag <id>`

Parameters

<interface>	Specifies the in-path HP EFS WAN Accelerator for which the VLAN applies.
<id>	Specifies the VLAN identification number. The VLAN identification number is a value with a range from 0-4094 (0 means no tagging).

Example

```
minna (config) #in-path interface 10.0.0.1 vlan 26
minna (config) #
```

in-path kickoff

Description Resets open connections on start up. The **no** command option disables the in-path kickoff feature.

When the HP EFS WAN Accelerator is not powered on or the HP EFS WAN Accelerator service is not running, the failover HP EFS WAN Accelerator takes over so that connections continue to be made to the WAN. With kickoff enabled, when the HP EFS WAN Accelerator service starts, it breaks existing connections and forces clients to open a new connection. With kickoff disabled, open connections are not broken but they unoptimized—new connections are optimized.

Syntax `in-path kickoff`

Parameters None

Example

```
minna (config) # in-path kickoff
minna (config) #
```

in-path layer-4 enable

Description Enables Policy Based Routing (PBR) support. PBR is a router configuration that allows you to define policies to route packets instead of relying on routing protocols. It is enabled on an interface basis and packets coming into a PBR-enabled interface are checked to see if they match the defined policies.

For detailed information, see [“Configuring PBR” on page 117](#).

Syntax `in-path layer-4 enable`

Parameters None

Example

```
minna (config) # in-path layer-4 enable
minna (config) #
```

in-path neighbor enable

Description Enables connection forwarding in networks where there is asymmetric routing. For example, connection forwarding is enabled when packets come back to the client on a different path than the one they used to reach the server. The **no** command option disables connection forwarding support.

When multiple HP EFS WAN Accelerators are forwarding packets to each other, they are called *neighbors*. If you have one path (SH1) from the client to the server and a different path (SH2) from the server to the client, you need to enable in-path connection forwarding and set the IP address for each *neighbor* HP EFS WAN Accelerator. For example:

```
minna (config) # in-path neighbor enable
minna (config) #in-path neighbor ip-address 10.0.0.4
;;client-side appliance
minna (config) #in-path neighbor ip-address 10.0.0.6
;;the server-side appliance
```

NOTE: If there are more than two possible paths, additional HP EFS WAN Accelerators must to be installed on each path and configured as neighbors. Neighbors are notified in parallel so that the delay introduced at connection set up is equal to the time it takes to get an acknowledgement from the furthest neighbor.

Syntax **in-path neighbor enable**

Parameters None

Example

```
minna (config) # in-path neighbor enable
minna (config) #in-path neighbor ip-address 10.0.0.4
minna (config) #in-path neighbor ip-address 10.0.0.
```

in-path neighbor ip-address

Description Sets the IP address for the neighbor HP EFS WAN Accelerator for connection forwarding. The **no** command option disables the IP address for the neighbor HP EFS WAN Accelerator.

When multiple HP EFS WAN Accelerators are forwarding packets to each other, they are called *neighbors*. If you have one path (SH1) from the client to the server and a different path (SH2) from the server to the client, you need to enable in-path packet redirection and set the IP address for each neighbor HP EFS WAN Accelerator. For example:

```
minna (config) # in-path neighbor enable
minna (config) #in-path neighbor ip-address 10.0.0.4
;;client-side appliance
minna (config) #in-path neighbor ip-address 10.0.0.6
;;the server-side appliance
```

Syntax **in-path neighbor ip-address (addr>**

Parameters

<addr>	Specifies the IP address of the neighbor HP EFS WAN Accelerator.
---------------------	--

Example

```
minna (config) # in-path neighbor ip-address 10.0.0.4
minna (config) #
```

in-path rule auto-discover

Description Adds an in-path, auto-discovery rule. The HP EFS WAN Accelerator automatically intercepts and optimizes traffic on all IP addresses (0.0.0.0) and ports (all).

The **no** command option disables the in-path auto-discover rule. The **no** command option has the following syntax: **no in-path <rulenum>**.

Syntax **in-path rule auto-discover** {**destaddr** <addr> **destport** <port> [**srcaddr** <addr>] [**rulenum** <rulenum>] [**vlan** <vlan tag ID>]}

Parameters

destaddr <addr>	Specifies the destination server address. For example: 10.0.0.0/24 .
destport <port>	Specifies the destination port number. You can also specify a wildcard (*).
srcaddr <addr>	Specifies the source IP address for which this rule applies. For example: 10.0.0.3/24 .
rulenum <rulenum>	Specifies the rule number: 1-N or start or end . The rule inserts itself at the rule specified. For example, if rulenum is 3 then the new rule will be #3 , the old #3 rule will be #4 and so forth. Start specifies the rule to be the first rule and end specifies it to be the last rule.
vlan <vlan tag ID>	Specifies the VLAN tag ID for which the rule applies. The VLAN identification number is a value with a range from 0-4094 (0 means no-tagging).

Example

```
minna (config) # in-path rule auto-discover addr 10.10.10.1 port 2121
rulenum 25
minna (config) #
```

in-path rule fixed-target

Description Adds a in-path, fixed-target rule. Specify an HP EFS WAN Accelerator between the client and server on which to intercept and optimize traffic. The **no** command option disables the in-path rule. The **no** command option has the following syntax: **no in-path rule <rulenum>**.

Syntax **in-path rule fixed-target** {**destaddr** <addr> **destport** <port> [**srcaddr** <addr>] [**rulenum** <num>]} {**target-addr** <addr> **target-port** <port>} [[**backup-addr** <addr> **backup-port** <port>] [**vlan** <vlan tag ID>]]

Parameters

destaddr <addr>	Specifies the destination server address. For example: 10.0.0.0/24.
destport <port>	Specifies the destination port number. You can also specify a wildcard (*).
srcaddr <addr>	Specifies the source IP address for packets to be intercepted by this rule. For example: 10.0.0.3/24.
rulenum <rulenum>	Specifies the rule number: 1-n or start or end. The rule inserts itself at the rule specified. For example, if rulenum is 3 then the new rule will be #3, the old #3 rule will be #4 and so forth. Start specifies the rule to be the first rule and end specifies it to be the last rule.
target-addr <addr> target-port <port> backup-addr <addr> [backup-port <port>]	Specifies the IP address and port number for the target and backup HP EFS WAN Accelerators for out-of-path configurations.
vlan <vlan tag ID>	Specifies the VLAN tag ID for which the rule applies. The VLAN identification number is a value with a range from 0-4094 (0 means no-tagging).

Example

```
minna (config) # in-path rule fixed-target addr 10.10.10.1 port 2121  
target-addr 10.24.24.24.1  
minna (config) #
```

in-path rule move

Description

Moves an in-path rule.

Syntax

in-path rule move <rulenum> to <rulenum>

Parameters

<rulenum>	Specifies the rule number or start or end .
------------------------	---

Example

```
minna (config) # in-path rule move 25 to 10  
minna (config) #
```

in-path rule pass-through

Description

Adds an in-path, pass-through rule. Specify a subnet for which you do not want to optimize traffic. The **no** command option disables the in-path rule. The **no** command option has the following syntax: **no in-path rule** <rulenum>.

Syntax

in-path rule pass-through
{destaddr <addr> destport <port> [srcaddr <addr>] [rulenum <rulenum>]
[vlan <vlan tag ID>]}

Parameters

destaddr <addr>	Specifies the destination server address. For example: 10.0.0.0/24 .
destport <port>	Specifies the destination port number. You can also specify a wildcard (*).
srcaddr <addr>	Specifies the source IP address for which this rule applies. For example: 10.0.0.3/24 .
rulenum <rulenum>	Specifies the rule number: 1-N or start or end . The rule inserts itself at the rule specified. For example, if rulenum is 3 then the new rule will be #3 , the old #3 rule will be #4 and so forth. Start specifies the rule to be the first rule and end specifies it to be the last rule.
vlan <vlan tag ID>	Specifies the VLAN tag ID for which the rule applies. The VLAN identification number is a value with a range from 0-4094 (0 means no-tagging).

Example

```
minna (config) # in-path rule pass-through addr 10.10.10.1 port 2121
rulenum 25
minna (config) #
```

interface

Description Configures network interfaces. The **no** command option disables the interface settings.

Syntax interface {<interfacename> <options>}

Parameters

<interfacename>	Specifies the interface name: aux , lan , wan , primary , in-path .
<options>	Each interface has the following configuration options: <ul style="list-style-type: none"> • dhcp. Enables Dynamic Host Configuration Protocol (DHCP) on the interface. • duplex <speed>. Specifies the duplex speed: auto, full, half. • ip address <addr>. Specifies IP address for the interface. • netmask. Specifies the netmask for the interface. • shutdown. Shuts down the interface. • speed <speed>. Specifies the speed for the interface: auto, 10, 100, 1000. • mtu <speed>. Configures the Maximum Transmission Unit (MTU). The MTU is set once on the in-path interface, it propagates automatically to the LAN and the WAN. The no command option disables the MTU setting.

Example

```
(config) # interface lan dhcp 100
(config) #
```

ip default-gateway

Description Sets the default gateway IP address. The **no** command option disables the default gateway IP address.

Syntax `ip default-gateway <addr>`

Parameters

<addr>	Specifies the IP address.
---------------------	---------------------------

Example

```
minna (config) # ip default-gateway 10.10.10.1
minna (config) #
```

ip domain-list

Description Adds a domain name to the domain list for resolving host names. The **no** command option removes a domain from the domain list.

Syntax `ip domain list <domain>`

Parameters

<domain>	Specifies the domain name.
-----------------------	----------------------------

Example

```
minna (config) # ip domain-list example.com
minna (config) #
```

ip host

Description Adds an entry to the static host table. The **no** command option removes an entry from the static host table.

Syntax `ip host <hostname> <addr>`

Parameters

<hostname>	Specifies the host name.
-------------------------	--------------------------

<addr>	Specifies the IP address.
---------------------	---------------------------

Example

```
minna (config) # ip host park 10.10.10.1
minna (config) #
```

ip in-path route

Description Adds a static in-path route. The **no** command option removes an in-path route.

Syntax `ip in-path route <network prefix> <network mask> <next hop IP address>`

Parameters

<network prefix>	Specifies the network prefix.
<network mask>	Specifies the netmask.
<next hop IP address or WAN gateway>	Specifies the next hop IP address in this route or WAN gateway.

Usage In-path interfaces use routes from an in-path route table. To configure in-path routes you set a new in-path route that points to your WAN gateway. You must also copy any static routes that you have added to the main table (if they apply to the in-path interface).

Example

```
minna (config) # ip in-path route 193.140.0.0 255.255.0.0 190.160.0.0
minna (config) #
```

ip in-path-gateway

Description Configures the primary in-path default gateway. The **no** command option disables the default gateway.

Syntax `ip in-path-gateway <destination addr>`

Parameters

<destination addr>	Specifies the destination (IP address) of the in-path gateway.
---------------------------------	--

Example

```
minna (config) # ip in-path-gateway 10.0.0.0
minna (config) #
```

ip name-server

Description Adds a DNS name server. The **no** command option removes a DNS name server.

Syntax `ip name-server <addr>`

Parameters

<addr>	Specifies the name server IP address.
---------------------	---------------------------------------

Example

```
minna (config) # ip name-server 10.10.10.1
minna (config) #
```

ip route

Description Adds a static route. The **no** command option disables the static route. If **no ip route** command is called with no parameters, it removes all static routes. If it is called with only a network prefix and mask, it deletes all routes for that prefix.

Syntax **ip route** <network prefix> <netmask> <next-hop-IP-addr>

Parameters

<network prefix>	Specifies the network prefix.
<netmask>	Specifies the netmask.
<next-hop-IP-addr>	Specifies the next hop IP address.

Example

```
minna (config) # ip route 193.166.0/24 10.10.10.1
minna (config) #
```

license delete

Description Deletes the specified license key.

Syntax **license delete** <number>

Parameters

<number>	Specifies the license key to delete.
----------	--------------------------------------

Example

```
minna (config) # license delete SH10_B-0000-1-7F14-FC1F
minna (config) #
```

license install

Description Installs a new software license key.

Syntax **license install** <license key>

Parameters

<license key>	Specifies the license key.
---------------	----------------------------

Example

```
minna (config) # license install SH10_B-0000-1-7F14-FC1F
minna (config) #
```

limit bandwidth max

Description Enables bandwidth thresholds on the specified interface at the specified speed. The **no** command option disables the bandwidth thresholds.

Syntax **limit bandwidth max** <interface> <kbps>

Parameters

<interface>	Specifies the interface: WAN or primary.
<kbps>	Specifies the bandwidth in kbps.

Example

```
minna (config) # limit bandwidth max 500
minna (config) #
```

logging

Description Adds a remote **syslog** server to the system. The **no** command option removes a remote **syslog** server from the system.

Syntax **logging** <hostname> trap <log level>

Parameters

<hostname>	Specifies the hostname for the syslog server.
trap <log level>	Specifies the trap log level of the syslog server. If you have set different log levels for each remote syslog server, this command changes all remote syslog servers to have a single log level.

Example

```
minna (config) # logging minna
minna (config) #
```

logging files delete

Description Deletes a specified number of log files.

Syntax **logging files delete** [oldest <number>]

Parameters

oldest <number>	Deletes the oldest log files. Specifies the number of log files to delete. The range is 1-10 .
-----------------	---

Example

```
minna (config) # logging files delete oldest 10
minna (config) #
```

logging files rotation criteria frequency

Description Sets the frequency of log rotation. The default value is **Weekly**.

Syntax **logging files rotation criteria frequency** <frequency>

Parameters

<frequency>	Specifies how often log rotation occurs: weekly, daily, hourly .
--------------------------	---

Example

```
minna (config) # logging files rotation criteria frequency weekly
minna (config) #
```

logging files rotation criteria size

Description Sets the size, in MB, of the log file before rotation occurs. The default value is 0 (unlimited).

Syntax **logging files rotation criteria size** <size>

Parameters

<size>	Specifies the size of the log file to save in MB.
---------------------	---

Example

```
minna (config) # logging files rotation criteria size 100
minna (config) #
```

logging files rotation force

Description Rotates logs immediately.

Syntax **logging files rotation force**

Parameters None

Example

```
minna (config) # logging files rotation force
minna (config) #
```

logging files rotation max-num

Description Sets the maximum number of log files to keep locally. The default value is 10.

Syntax **logging files rotation max-num** <number>

Parameters

<number>	Specifies the number of log files to keep locally. The range is 1-100 .
-----------------------	--

Example

```
minna (config) # logging files rotation max-num 10
minna (config) #
```

logging local

Description Sets the minimum severity for messages sent to the local **syslog** servers. The default value is **none**. The **no** command option sets the severity level for logging to none (no logs are sent).

Syntax `logging local <loglevel>`

Parameters

<loglevel>	Specifies the logging severity level. The follow severity levels are supported: <ul style="list-style-type: none">• emerg. Emergency, the system is unusable.• alert. Action must be taken immediately.• crit. Critical conditions.• err. Error conditions.• warning. Warning conditions.• notice. Normal but significant condition.• info. Informational messages.• debug. Debug-level messages.
-------------------------	--

Example

```
minna (config) # logging local notice
minna (config) #
```

logging trap

Description Sets the minimum severity for messages sent to the remote **syslog** servers. The default value is **none**. The **no** command option sets the severity level for logging to none.

Syntax `logging trap <loglevel>`

Parameters

<loglevel>	Specifies the logging severity level. The following levels are supported: <ul style="list-style-type: none">• emerg. Emergency, the system is unusable.• alert. Action must be taken immediately.• crit. Critical conditions.• err. Error conditions.• warning. Warning conditions.• notice. Normal but significant condition.• info. Informational messages.• debug. Debug-level messages.
-------------------------	--

Example

```
minna (config) # logging trap notice
minna (config) #
```

ntpdate

Description Conducts a single time synchronization with a specified Network Time Protocol (NTP) server.

Syntax `ntpdate <addr>`

Parameters

<addr>	Specifies the NTP server with which to synchronize.
---------------------	---

Example

```
minna (config) # ntpdate 10.10.10.1
minna (config) #
```

ntp disable

Description Disables NTP support. The **no** command option enables NTP support.

Syntax `ntp disable`

Parameters None

Example

```
minna (config) # ntp disable
minna (config) #
```

ntp enable

Description Enables NTP support. The **no** command option disables NTP support.

Syntax `ntp enable`

Parameters None

Example

```
minna (config) # ntp enable
minna (config) #
```

ntp peer

Description Enables an NTP peer. The **no** command option disables an NTP peer.

Syntax `ntp peer <addr> [version <number>]`

Parameters

<addr>	Specifies the NTP peer IP address.
version <number>	Specifies the NTP version number. You do not need to specify the version number for the no ntp peer command.

Example

```
minna (config) # ntp peer 10.10.10.1
minna (config) #
```

ntp server

Description Configures an NTP server. The **no** command option removes an NTP server.

Syntax **ntp server** <addr> [version <number>]

Parameters

<addr>	Specifies the NTP server with which to synchronize.
version <number>	Specifies the version number for NTP. You do not need to specify the version number for the no ntp server command.

Example

```
minna (config) # ntp server 10.10.10.1
minna (config) #
```

out-of-path enable

Description Enables out-of-path configuration. The default value is **false**. The **no** command option disables out-of-path configuration.

Syntax **out-of-path enable**

Parameters None

Example

```
minna (config) # out-of-path enable
minna (config) #
```

out-of-path port

Description Sets the out-of-path port. The default value is **7810**. The **no** command option resets the out-of-path port to the default value.

Syntax **out-of-path port** <port>

Parameters

<port>	Specifies the out-of-path port number.
--------	--

Example

```
minna (config) # out-of-path port 2125
minna (config) #
```

protocol cifs disable write optimization

Description	Disables CIFS write-through. The no command option enables CIFS write-through.
Syntax	protocol cifs disable write optimization
Parameters	None
Example	<pre>minna (config) # protocol cifs disable write optimization minna (config) #</pre>

protocol cifs prepop enable

Description	Enables CIFS transparent prepopulation. The no command option disables transparent prepopulation.
Syntax	protocol cifs prepop enable
Parameters	None
Example	<pre>minna (config) # protocol cifs prepop enable minna (config) #</pre>

protocol cifs secure-sig-opt enable

Description	<p>Disables SecuritySignature negotiations between a Windows client and the server. By default the Secure-CIFS feature is disabled. For detailed information about disabling Windows security signing, see the <i>HP StorageWorks Enterprise File Services WAN Accelerator Installation and Configuration Guide</i>.</p> <p>When a Windows server is set to SecuritySignatureEnable, the HP EFS WAN Accelerator stops CIFS optimizations but continues performing SDR optimizations. When the HP EFS WAN Accelerator command secure-sig-opt is set to enable, the HP EFS WAN Accelerator appliance continues perform CIFS optimizations for connections even when the SecuritySignatureEnable setting is specified. (The HP EFS WAN Accelerator does not continue to optimize traffic if the SecuritySignatureRequired setting is specified on the server.)</p>
Syntax	protocol cifs secure-sig-opt enable
Parameters	None
Example	<pre>minna (config) # protocol cifs disable write optimization minna (config) #</pre>

protocol mapi nspi

Description Sets the Name Service Provider Interface (NSPI) port. In certain situations (for example, clients connecting through a firewall), you might want to force a server to listen on a single pre-defined port so that access to ports can be controlled or locked down on the firewall.

Syntax `protocol mapi nspi <port>`

Parameters

<port>	Specifies the incoming NSPI port number.
---------------------	--

Example

```
minna (config) # protocol mapi nspi port 2125
minna (config) #
```

protocol mapi port

Description Sets the incoming Mail Application Programming Interface (MAPI) port. The default value is **7830**. The **no** command option resets the MAPI port to the default value.

Syntax `protocol mapi port <port>`

Parameters

<port>	Specifies the incoming MAPI port number.
---------------------	--

Example

```
minna (config) # protocol mapi port 2125
minna (config) #
```

protocol mapi prepop enable

Description Enables MAPI prepopulation support. Transparent prepopulation allows mail data to be delivered between the Exchange server and the client-side HP EFS WAN Accelerator while the Outlook client is offline. When a user logs into their MAPI client, the mail bits are already waiting in the client-side HP EFS WAN Accelerator and can be retrieved locally. The **no protocol mapi prepop enable** command option disables MAPI prepopulation support.

Syntax `protocol mapi prepop enable
[max-connections <number> | poll-interval <minutes> | timeout
<seconds>]`

Parameters

enable	Enables MAPI prepopulation support.
max-connections <number>	Specifies the maximum number of connections to enable.
poll-interval <minutes>	Specifies the polling interval in minutes.
timeout <seconds>	Specifies the time out period in seconds.

Example

```
minna (config) # protocol mapi prepop enable
minna (config) #
```

qos port dscp

Description Sets the Quality of Service (QoS) Differentiated Services Code Point (DSCP) levels for the specified port. The **no** command option disables QoS settings.

Syntax **qos port <port> dscp <level>**

Parameters

<port>	Specifies the port on which to monitor.
<level>	Specifies the DSCP level (0-63).

Example

```
minna (config) # qos port 24 dscp 2
minna (config) #
```

radius-server host

Description Adds a RADIUS server to the set of servers used for authentication. Some of the parameters given can override the configured global defaults for all RADIUS servers.

Syntax **radius-server host {host <hostname> | ip-address <ip address>}
[auth-port <port-number> | timeout <seconds> |
retransmit <retries> | key <string>]**

Parameters

hostname IP address	Specifies the RADIUS server host name or IP address.
auth-port <port>	Specifies the authorization port number. The default value is 1812 .
key <keynumber>	Sets the shared secret text string used to communicate with any RADIUS server.
retransmit <number>	Specifies the number of times the client attempts to authenticate with any RADIUS server. The default value is 1 . The range is 0-5 . To disable retransmissions set it to 0 .
timeout <seconds>	Sets the timeout for retransmitting a request to any RADIUS server. The range is 1-60 . The default value is 3 .

Usage

The same IP address can be used in more than one **radius-server host** command if the **auth-port** value is different for each. The **auth-port** value is a UDP port number. The **auth-port** value must be specified immediately after the **hostname** option (if present).

If **no radius-server host {hostname | ip-address}** is specified, all radius configurations for the host are deleted. The **no radius-server host {hostname | ip-address} auth-port {port}** command can be specified to refine which host is deleted, as the previous command deletes all RADIUS servers with the specified IP address.

RADIUS servers are tried in the order they are configured.

Example

```
minna (config) # radius-server host 10.0.0.0 key XXXX retransmit 3
timeout 10
minna (config) #
```

radius-server key**Description**

Sets the shared secret text string used to communicate with a RADIUS server. This command can be overridden using the **radius-server host** command. The **no** command option resets the key to the default value.

Syntax

radius-server key <string>]

Parameters

<string>	Sets the shared secret text string used to communicate with any RADIUS server.
-----------------------	--

Example

```
minna (config) # radius-server key XYZ
minna (config) #
```

radius-server retransmit

Description Specifies the number of times the client attempts to authenticate with any RADIUS server. This command can be overridden in a **radius-server host** command. The **no** command option resets the value to the default value.

Syntax **radius-server retransmit <retries>**

Parameters

<retries>	Specifies the number of times the client attempts to authenticate with any RADIUS server. The range is 0-5 . The default value is 1 .
------------------------	---

Example

```
minna (config) # radius-server retransmit 5
minna (config) #
```

radius-server timeout

Description Sets the timeout for retransmitting a request to any RADIUS server. The range is **1-60**. The default value is **3**. This command can be overridden in a **radius-server host** command. The **no** command option resets the value to the default value.

Syntax **radius-server timeout <seconds>]**

Parameters

<seconds>	Sets the timeout for retransmitting a request to any RADIUS server. The range is 1-60 . The default value is 3 .
------------------------	--

Example

```
minna (config) # radius-server timeout 30
minna (config) #
```

segstore receive port

Description Receives the data store from another HP EFS WAN Accelerator. The failover HP EFS WAN Accelerator must be the same model. You cannot preload a data store on a non-failover-buddy appliance.

Syntax **segstore receive port <port>**

Parameters

<port>	Specifies the port number.
---------------------	----------------------------

Example

```
minna (config) # segstore receive port 20
minna (config) #
```

segstore send addr

Description Sends the data store to another HP EFS WAN Accelerator. The other HP EFS WAN Accelerator must be the same model. You cannot preload a data store on a non-failover-buddy appliance.

Syntax `segstore send addr <addr> [port <port>]`

Parameters

<code><addr></code>	Specifies the IP address.
<code>port <port></code>	Specifies the port number.

Example

```
minna (config) # segstore send addr 10.10.10.1
minna (config) #
```

service authentication secret

Description Enables authentication between HP EFS WAN Accelerators. The HP EFS WAN Accelerator uses a modified version of the Challenge Handshake Authentication Protocol (CHAP). There are shared secrets that the HP EFS WAN Accelerator uses to form responses to challenges. The secrets are strings of data that the HP EFS WAN Accelerators on each side of the network know but do not actually transfer.

You can set secrets to be the same on all participating appliances and enable them to authenticate peers:

- ◆ Appliance1: secret1 (client) = Foo, secret2 (server) = bar, enable = false
- ◆ Appliance2: secret1 (client) = Foo, secret2 (server) = bar, enable = true
- ◆ Appliance3: secret1 (client) = Foo, secret2 (server) = bar, enable = true

Appliance1 is authenticated when connecting to Appliance2, but not when Appliance3 connects to it. Typically, you will authenticate all the HP EFS WAN Accelerators or none.

There are two secrets available to you:

- ◆ **Client (Secret1).** Authenticate peers that are connected to your appliance.
- ◆ **Server (Secret2).** Authenticate peers that your appliance is connected to.

You must specify secrets on both your HP EFS WAN Accelerators for authentication to function properly.

For optimum security, the secrets must be at least 16 bytes (this is not necessary for operation). The two secrets can be identical, but this decreases security.

Syntax `service authentication secret {client <secret1> server <secret2>}`

Parameters

client <secret1>	Specifies the client machine password.
server <secret2>	Specifies the server machine password.

Example

```
minna (config) # service authentication secret client xxxyy server yyyxx
minna (config) #
```

service enable

Description Starts the HP EFS WAN Accelerator service.

Syntax **service enable**

Parameters None

Example

```
minna (config) # service enable
minna (config) #
```

service error reset

Description Resets the HP EFS WAN Accelerator service after a service error.

Syntax **service error reset**

Parameters None

Example

```
minna (config) # service error reset
minna (config) #
```

snmp-server community

Description Enables an SNMP server community. The **no** command option disables an SNMP server community.

Syntax **snmp-server community <name>**

Parameters

<name>	Specifies the name of the SNMP server community.
---------------------	--

Example

```
minna (config) # snmp-server community ReaDonLy
minna (config) #
```

snmp-server contact

Description Sets the SNMP server contact. The **no** command option disables the SNMP server contact.

Syntax `snmp-server contact <name>`

Parameters

<name>	Specifies the name of the SNMP server community contact.
---------------------	--

Example

```
minna (config) # snmp-server contact john doe
minna (config) #
```

snmp-server enable

Description Enables an SNMP server. The **no** command option disables the SNMP server or traps.

Syntax `snmp-server enable [traps]`

Parameters

traps	Enables SNMP traps.
--------------	---------------------

Example

```
minna (config) # snmp-server enable
minna (config) #
```

snmp-server host

Description Sets the SNMP server host, traps, and version. The **no** command option disables the SNMP server host.

Syntax `snmp-server {host <hostname or IP address> traps <communitystring> traps version <versionnumber> <communityname>}`

<hostname or IP address>	Specifies the host name or IP address for the SNMP server.
---------------------------------------	--

traps <communitystring>	Sets the SNMP trap on a community.
--------------------------------------	------------------------------------

traps version <versionnumber> <communityname>	Specifies the SNMP trap version number and community name.
--	--

Example

```
minna (config) # snmp-server host minna
minna (config) #
```

snmp-server location

Description Sets the SNMP server location. The **no** command option disables the SNMP server location.

Syntax **snmp-server location** <addr>

Parameters

<addr>	Specifies the location of the system.
--------	---------------------------------------

Example

```
minna (config) # snmp-server location 10.10.10.1
minna (config) #
```

ssh server enable

Description Enables an **ssh** server. The **no** command option disables the **ssh** server.

Syntax **ssh server enable**

Parameters None

Example

```
minna (config) # ssh server enable
minna (config) #
```

stats alarm

Description Configure alarms based on sampled or computed statistics. The **no** command option disables all statistical alarms. The **no stats alarm <type> enable** command disables specific statistical alarms.

Syntax **stats alarm** {<type> <options>}

Parameters

<type>	Specifies the following types of alarms: bypass (configures all states for alarms), cpu_util_ave , duplex_pri (primary), duplex_aux (auxiliary), duplex_lan (LAN), duplex_wan (WAN), halt_error , mismatch_peer (peer mismatch), paging (memory paging), service_error (HP EFS WAN Accelerator service error), store_corruption (data store corruption), and sw_version (software version mismatch).
--------	--

<options>	Specifies the following alarm options: <ul style="list-style-type: none">• clear. Clears alarm settings.• enable. Enables alarm• rising. Sets rising threshold.• rising clear_threshold <amount>. Sets the threshold to clear rising alarm.• rising error_threshold <amount>. Sets threshold to trigger rising alarm.
-----------	--

Example

```
minna (config) # stats alarm bypass enable
minna (config) #
```

stats chd

Description Sets computed historical data points.

Syntax stats chd <CHD ID> clear

Parameters

<CHD ID>	Specifies the specific data point: <CHD ID>, cpu_util , cpu_util_ave , cpu_util_day , duplex_aux , duplex_lan , duplex_pri , duplex_wan , memory_day , paging , paging_day , rbt , rbt_day , rbt_month , rbt_week , rbtnkernel , rbtnkernel_day , rbtnkernel_month , rbtnkernel_week .
clear	Clears all data.

Example

```
minna (config) # stats chd rbt_month
minna (config) #
```

stats clear-all

Description Clears all statistics.

Syntax stats clear-all

Parameters None

Example

```
minna (config) # stats clear-all
minna (config) #
```

stats sample

Description Configure sampled statistics.

Syntax stats sample {<type> clear | interval <seconds>}

Parameters

type	Specifies the type of statistic: admission_conn , admission_mem , bypass , cpu_util , duplex_aux , duplex_lan , duplex_pri , duplex_wan , halt_error , memory , mismatch_peer , paging , raid_error , raid_warning , rbt , rbtnkernel , service_error , store-corruption , sw-version .
clear	Clears all statistics for type.
interval <seconds>	Specifies the sampling interval for this set of samples.

Example

```
minna (config) # stats bypass clear
minna (config) #
```

stats settings bandwidth

Description Configure sampled statistics.

Syntax stats settings bandwidth <port>

Parameters

<port>	Specifies the port number.
--------	----------------------------

Example

```
minna (config) # stats settings bandwidth 2727
minna (config) #
```

tacacs-server host

Description Adds a TACACS+ server to the set of servers used for authentication. Some of the parameters given can override the configured global defaults for all TACACS+ servers. The **no** command option disables TACACS+ support.

Syntax tacacs-server host {hostname <ip-address> | auth-port <port-number> | timeout <seconds> | retransmit <retries> | key <string>}

Parameters

hostname IP address	Specifies the TACACS+ server host name or IP address.
auth-port <port>	Specifies the authorization port number. The default value is 49.
key <keynumber>	Sets the shared secret text string used to communicate with any TACACS+ server.
retransmit <number>	Specifies the number of times the client attempts to authenticate with any TACACS+ server. The default value is 1. The range is 0-5. To disable retransmissions set it to 0.
timeout <seconds>	Sets the timeout for retransmitting a request to any TACACS+ server. The range is 1-60. The default value is 3.

Usage The same IP address can be used in more than one **tacacs-server host** command if the **auth-port** value is different for each. The **auth-port** value is a UDP port number. The **auth-port** value must be specified immediately after the **hostname** option (if present).

If **no tacacs-server host {hostname | ip-address}** is specified, all radius configurations for this host are deleted. The **no tacacs-server host {hostname | ip-address} auth-port {port}** command can be specified to refine which host is deleted, as the previous command deletes all RADIUS servers with the specified IP address.

TACACS+ servers are tried in the order they are configured.

Example

```
minna (config) # tacacs-server host 10.0.0.0
minna (config) #
```

tacacs-server key

Description

Sets the shared secret text string used to communicate with any TACACS+ server. This command can be overridden using the **tacacs-server host** command. The **no** command option resets the value to the default value.

Syntax

tacacs-server key <string>

Parameters

<string>	Sets the shared secret text string used to communicate with any TACACS+ server.
-----------------------	---

Example

```
minna (config) # tacacs-server key XYZ
minna (config) #
```

tacacs-server retransmit

Description

Specifies the number of times the client attempts to authenticate with any TACACS+ server. The default value is **1**. The range is **0-5**. To disable retransmissions set it to 0. This command can be overridden in a **tacacs-server host** command. The **no** command option resets the value to the default value.

Syntax

tacacs-server retransmit <retries>

Parameters

<retries>	Specifies the number of times the client attempts to authenticate with any TACACS+ server. The range is 0-5 . The default value is 1 .
------------------------	--

Example

```
minna (config) # tacacs-server retransmit 5
minna (config) #
```

tacacs-server timeout

Description

Sets the timeout for retransmitting a request to any TACACS+ server. This command can be overridden in a **tacacs-server host** command. The **no** command option resets the value to the default value.

Syntax

tacacs-server timeout <seconds>

Parameters

<seconds>	Sets the timeout for retransmitting a request to any TACACS+ server. The range is 1-60 . The default value is 3 .
------------------------	---

Example

```
minna (config) # tacacs-server timeout 30
minna (config) #
```

terminal

Description Configures terminal display.

Syntax **terminal {auto-resize | length <number> | width <number>}**

Parameters

auto-resize	Automatically determines the size of the terminal.
length <number>	Specifies the number of lines for the terminal.
width <number>	Specifies the terminal width in characters.

Example

```
minna (config) # stats settings connection rtt 500
minna (config) #
```

username disable

Description Disables the account so that no one can log in with any password. The **no** command option re-enables the specified user account. To re-enable the account, you must set a password for it.

Syntax **username <userid> disable**

Parameters

<userid>	Specifies the user login: admin or monitor .
-----------------------	--

Example

```
minna (config) # username monitor disable
minna (config) #
```

username nopassword

Description Disables password protection for a user. The **no** command option re-enables the specified user account.

Syntax **username <userid> nopassword**

Parameters

<userid>	Specifies the user login: admin or monitor .
-----------------------	--

Example

```
minna (config) # username monitor nopassword
minna (config) #
```

username password

Description Sets the password for the specified user. The password must be a minimum of 6 characters. The password is returned in cleartext format on the command line.

Syntax `username <userid> password <cleartext>`

Parameters

<userid>	Specifies the user login: admin or monitor .
<cleartext>	Specifies the password. The password must be a least of 6 characters.

Example

```
minna (config) # username admin password xyzzzzZ
minna (config) #
```

username password 0

Description Sets the password for the specified user. The password must be a minimum of 6 characters. The password is returned in cleartext format on the command line.

Syntax `username <userid> password 0 <password>`

Parameters

<userid>	Specifies the user login: admin or monitor .
<password>	Specifies the password. The password must be a minimum of 6 characters.

Example

```
minna (config) # username admin password 0 xyzzzzZ
minna (config) #
```

username password 7

Description Sets the password for the specified user. The password must be a minimum of 6 characters. The password is returned in encrypted format on the command line.

Syntax `username <userid> password 7 <password>`

Parameters

<userid>	Specifies the user login: admin or monitor .
<password>	Specifies the password. The password must be a minimum of 6 characters.

Example

```
minna (config) # username admin password 7 xyzzzZ
minna (config) #
```

username password cleartext

Description Sets the password for the specified user. The password must be a minimum of 6 characters. The password is returned in cleartext format on the command line.

Syntax **username** <userid> password cleartext <password>

Parameters

<userid>	Specifies the user login: admin or monitor .
<password>	Specifies the password. The password must be a minimum of 6 characters.

Example

```
minna (config) # username admin password cleartext xyzzzZ
minna (config) #
```

username password encrypted

Description Sets the password for the specified user. The password must be a minimum of 6 characters. The password is returned in encrypted format on the command line.

Syntax **username** <userid> password encrypted <password>

Parameters

<userid>	Specifies the user login: admin or monitor .
<password>	Specifies the password. The password must be a minimum of 6 characters.

Example

```
minna(config) # username admin password encrypted xyzzzZ
minna(config) #
```

username privilege

Description Creates a user account for RADIUS or TACACS+ authentication. The **admin** and **monitor** users are not be allowed to be created, modified, or deleted. The **<userid>** parameter is a text string that is a valid username (for example, **monitor** or **admin**). A user ID is chosen by the system (for example, starting at 1001+).

Syntax `username <userid> privilege <privilege_level>`

Parameters

<userid>	Specifies the user login: admin or monitor .
<privilege_level>	Specifies the maximum level the user can reach. There are two levels: 7 and 15 . Level 7 corresponds to enable mode privileges (monitor user) and level 15 corresponds to configuration mode privilege (admin user).

Example

```
minna(config) # username admin privilege 15
minna(config) #
```

wccp enable

Description Enables Web Cache Communication Protocol (WCCP) support. WCCP establishes and maintains the transparent redirection of selected types of traffic flowing through a group of routers. The selected traffic is redirected to a group of routers to reduce resource usage and lowering response times. The **no** command option disables WCCP support. For detailed information about configuring WCCP, see [Appendix A, "Configuring WCCP."](#)

Syntax `wccp enable`

Parameters None

Example

```
minna (config) # wccp enable
minna (config) #
```

wccp mcast-ttl

Description Sets the multicast time to live (TTL) parameter for WCCP. The TTL determines the range over which a multicast packet is propagated in your intranet. For detailed information about configuring WCCP, see [Appendix A, "Configuring WCCP."](#)

Syntax `wccp mcast-ttl <value>`

Parameters

<value>	Specifies the multicast-ttl value.
----------------------	------------------------------------

Example

```
minna (config) # wccp mcast-ttl 10
minna (config) #
```

wccp service group

Description

Enables a WCCP service group. WCCP enables you to redirect traffic through the HP EFS WAN Accelerator that is out-of-path to ensure that traffic is optimized. For detailed information about configuring WCCP, see [Appendix A, "Configuring WCCP."](#)

NOTE: The following section assumes you are familiar with WCCP. For detailed information about WCCP, see the Cisco documentation website at <http://www.cisco.com/univercd/home/home.htm>.

To enable WCCP, the HP EFS WAN Accelerator must join a service group at the router. A service group is a group of routers and HP EFS WAN Accelerators which define the traffic to redirect, and the routers and HP EFS WAN Accelerators the traffic goes through.

To enable failover support with WCCP groups, define the service group weight to be 0 on the backup HP EFS WAN Accelerator. If one HP EFS WAN Accelerator has a weight 0, but another one has a non-zero weight, the HP EFS WAN Accelerator with weight 0 does not receive any redirected traffic. If all the HP EFS WAN Accelerators have a weight 0, the traffic is redirected equally among them.

If the source or destination flags are set, the router redirects only the TCP traffic that matches the source or destination ports specified.

Syntax

```
wccp service group {<service ID> router <ip_address>} |
[flags <comma_separated_list> |
priority <priority_number> |
ports <comma separated list of up to 7 ports> |
password <string> |
weight <value> |
encap_scheme <string>]
```


Parameters

service group <service ID>	Specifies the service group ID is a number from 0 to 255 , identifying a particular service group. The service group ID is the number that is set on the router. A value of 0 specifies the standard http service group.
router <ip_address>	The router IP is multicast group IP address or a unicast router IP address. A total of 32 routers can be specified.
flags <hash-bit-identifier>	Specifies the combination of src-ip-hash , dst-ip-hash , src-port-hash , dst-port-hash , ports-dest , ports-source that define the fields the router hash on.
ports <portnumber>	Specifies a comma separated list of up to 7 ports that the router redirects traffic to. Use only if ports-dest or ports-source service flag is set.
priority <priority-number>	Specifies the WCCP priority for traffic redirection. If a connection matches multiple service groups on a router, the router chooses the service group with the highest priority. The range is 0-255 . The default value is 200 .
password <string>	Specifies the WCCP password. This password must be the same as the password on the router. (WCCP requires that all routers in a service group have the same password.) Passwords are limited to 8 characters.
weight <value>	The weight determines how often the traffic is redirected to a particular HP EFS WAN Accelerator. A higher weight redirects more traffic to that HP EFS WAN Accelerator. The ratio of traffic redirected to an HP EFS WAN Accelerator is equal to its weight divided by the sum of the weights of all the HP EFS WAN Accelerators in the same service group. For example, if there are 2 HP EFS WAN Accelerators in a service group and one has a weight of 100 and the other has a weight of 200 , the one with the weight 100 receives 1/3 of the traffic and the other receives 2/3 of the traffic. The range is 0-65535 . The default value corresponds to the HP EFS WAN Accelerator model (for example, for the Model DL380-5010 the default value is 5010 ; for the Model DL320-2010 the default value is 2010).
encap_scheme <string>	Specifies the traffic forwarding and redirection scheme: Generic Routing Encapsulation (gre) or Layer-2 (l2) redirection. The either value uses Layer-2 first—if Layer-2 is not supported, gre is tried.

Example

```
minna (config) # wccp 999 router 10.0.0.0
minna (config) #
```

web auto-logout

Description

Sets the number of minutes before the HP EFS WAN Accelerator Management Console automatically logs out the user. The default value is **15** minutes. The **no** command option disables the automatic log out feature.

Syntax

web auto-logout **<minutes>**

Parameters

<minutes>	Specifies the number of minutes before the system automatically logs out the user.
------------------------	--

Example

```
minna (config) # web auto-logout 20
minna (config) #
```

web enable

Description Enables the HP EFS WAN Accelerator Management Console. The default value is **true**. The **no** command option disables the HP EFS WAN Accelerator Management Console.

Syntax **web enable**

Parameters None

Example

```
minna (config) # web enable
minna (config) #
```

web http enable

Description Enables the HyperText Transfer Protocol (HTTP). The default value is **true**. The **no** command option disables the HP EFS WAN Accelerator Management Console.

Syntax **web http enable**

Parameters None

Example

```
minna (config) # web http enable
minna (config) #
```

web http port

Description Sets the web port. The default value is **80**. The **no** command option resets the web port to the default value.

Syntax **web http port <port>**

Parameters

<port>	Specifies the port number.
---------------------	----------------------------

Example

```
minna (config) # web http port 8080
minna (config) #
```

web https enable

Description	Sets the secure web. The no command option disables secure port support.
Syntax	web https enable
Parameters	None
Example	<pre>minna (config) # web https enable minna (config) #</pre>

web https port

Description	Sets the secure web port. The no command option disables support on a secure port.
Syntax	web https port <port>
Parameters	

<port>	Specifies the port number.
--------	----------------------------

Example	<pre>minna (config) # web https port 8080 minna (config) #</pre>
----------------	--

web session renewal

Description	Sets the session renewal time. The time duration before the web session timeout at which if a web request comes in (that is, user activity), the web session is automatically renewed. The default value is 10 minutes. The no command option resets the session renewal time to the default value.
Syntax	web https renewal <minutes>
Parameters	

<minutes>	Specifies the number of minutes.
-----------	----------------------------------

Example	<pre>minna (config) # web session renewal 5 minna (config) #</pre>
----------------	--

web session timeout

Description	Sets the session timeout value. This is the amount of time the cookie is active. The default value is 60 minutes. The no command option resets the session timeout to the default value.
Syntax	web session timeout <minutes>

Parameters

<minutes>	Specifies the number of minutes.
------------------------	----------------------------------

Example

```
minna (config) # web session timeout 120
minna (config) #
```

write memory

Description Saves the current configuration settings to memory.

Syntax **write memory**

Parameters None

Example

```
minna (config) # write memory
minna (config) #
```

write terminal

Description Display commands to recreate current running configuration.

Syntax **write terminal**

Parameters None

Example

```
minna (config) # write terminal
```

APPENDIX A

Configuring WCCP

In This Appendix

This appendix describes how to use the Web Cache Communication Protocol (WCCP) to redirect traffic to an HP EFS WAN Accelerator or group of HP EFS WAN Accelerators. It contains the following sections:

- ◆ [“Overview,”](#) next
- ◆ [“A Basic WCCP Configuration”](#) on page 110
- ◆ [“Advanced WCCP Features”](#) on page 113
- ◆ [“Troubleshooting”](#) on page 115

Overview

WCCP was originally implemented on Cisco routers, multi-layer switches, and Web caches to redirect HTTP requests to local Web caches (Version 1). Version 2, which is implemented on HP EFS WAN Accelerators, can redirect any type of connection from multiple routers or Web caches.

You configure WCCP to redirect traffic to an HP EFS WAN Accelerator or group of HP EFS WAN Accelerators that are out-of-path while still optimizing traffic on the client-side. With WCCP, you can also load-balance traffic and provide failover support.

You configure WCCP on the client-side HP EFS WAN Accelerator; the server-side HP EFS WAN Accelerator is configured as an out-of-path device.

How Does WCCP Work?

The following basic steps describe how WCCP works with the HP EFS WAN Accelerator:

1. Routers and HP EFS WAN Accelerators are added to the service group.
2. Routers announce themselves to the HP EFS WAN Accelerators.
3. Routers send back the state of the service group.
4. One HP EFS WAN Accelerator takes a leadership role and tells the routers how to redirect traffic.

The HP EFS WAN Accelerators use the following methods to communicate with routers:

- ◆ **Unicast (UDP Packets).** The HP EFS WAN Accelerator is configured with the IP address of each router. If the router configuration is changed, each HP EFS WAN Accelerator must also be changed.
- ◆ **Multicast.** The HP EFS WAN Accelerator is configured with a multicast group. If the router is changed, the HP EFS WAN Accelerator does not need to be reconfigured.

All traffic is redirected by default. You can configure specific source and destination ports to be redirected. For detailed information, see [“TCP Ports Redirection” on page 114](#).

For other types of redirection such as IP address, you configure Access Control Lists (ACLs) on the routers and add it to the service group. For detailed information, see [“Specific Traffic Redirection” on page 114](#).

Traffic is redirected using one of the following schemes:

- ◆ **gre (Generic Routing Encapsulation).** Each data packet is encapsulated in a GRE packet with the HP EFS WAN Accelerator IP address configured as the destination. This scheme is applicable to any network.
- ◆ **l2 (Layer-2).** Each packet MAC address is rewritten with an HP EFS WAN Accelerator MAC address. This scheme is possible only if the HP EFS WAN Accelerator is connected to a router at Layer-2.
- ◆ **either.** The **either** value uses l2 (Layer-) first—if Layer-2 is not supported, **gre** is tried.

You can load-balance using WCCP. Traffic is redirected based on a hashing scheme and the weight of the HP EFS WAN Accelerators. You can hash on a combination of the source IP address, destination IP address, source port, or destination port. The default weight is based on the HP EFS WAN Accelerator model number (for example, for the Model DL380-5010 the weight would be 5010). You can modify the default weight. For detailed information, see [“Load Balancing” on page 114](#).

You can also provide failover support using WCCP. In a failover configuration, the HP EFS WAN Accelerators periodically announce themselves to the routers. If an HP EFS WAN Accelerator fails, traffic is redirected to the working HP EFS WAN Accelerators. To enable failover support, you simply configure the weight for the backup HP EFS WAN Accelerator to be 0. For detailed information, see [“Failover Support” on page 115](#).

Basic Steps

The following are the basic steps for configuring WCCP.

1. Create a service group on the router.
2. Attach the HP EFS WAN Accelerator WAN interface to the network.
3. Configure the HP EFS WAN Accelerator to be an in-path device with WCCP support. For example, the CLI command: **in-path client-oop enable**.
4. Add fixed target, in-path rules to reach the server-side HP EFS WAN Accelerator.
5. Add and configure the service group on the HP EFS WAN Accelerator.

WCCP Commands

This section summarizes the WCCP commands. For detailed information, see the [Chapter 4, “Configuration-Mode Commands.”](#)

◆ To enable WCCP:

```
SH (config) # wccp enable
```

◆ To disable WCCP:

```
SH (config) # no wccp enable
```

◆ To specify the multicast Time To Live (ttl) value for WCCP:

```
SH (config) # wccp mcast-ttl 10
```

◆ To configure a service group:

```
SH (config) # wccp service-group routers [flags ] [priority ] [ports ]
[password ] [weight ] [encap_scheme ]
```

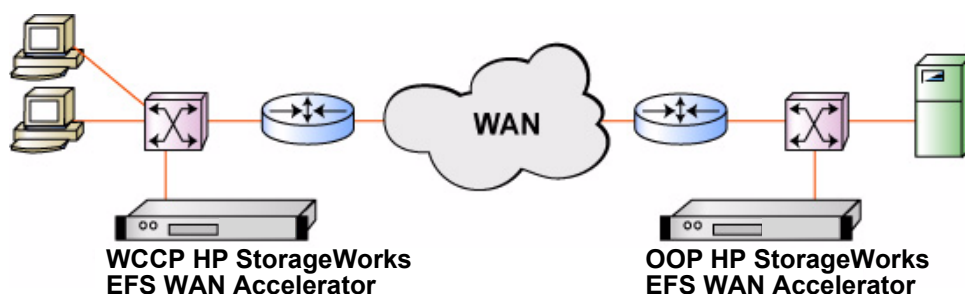
where

service group <service ID>	Specifies the service group ID is a number from 0 to 255 , identifying a particular service group. The service group ID is the number that is set on the router. A value of 0 specifies the standard http service group.
router <ip_address>	The router IP is multicast group IP address or a unicast router IP address. A total of 32 routers can be specified.
flags <hash-bit-identifier>	Specifies the combination of src-ip-hash , dst-ip-hash , src-port-hash , dst-port-hash , ports-dest , ports-source that define the fields the router hash on.
ports <portnumber>	Specifies a comma separated list of up to 7 ports that the router redirects traffic to. Use only if ports-dest or ports-source service flag is set.
priority <priority-number>	Specifies the WCCP priority for traffic redirection. If a connection matches multiple service groups on a router, the router chooses the service group with the highest priority. The range is 0-255 . The default value is 200 .
password <string>	Specifies the WCCP password. This password must be the same as the password on the router. (WCCP requires that all routers in a service group have the same password.) Passwords are limited to 8 characters.
weight <value>	The weight determines how often the traffic is redirected to a particular HP EFS WAN Accelerator. A higher weight redirects more traffic to that HP EFS WAN Accelerator. The ratio of traffic redirected to an HP EFS WAN Accelerator is equal to its weight divided by the sum of the weights of all the HP EFS WAN Accelerators in the same service group. For example, if there are 2 HP EFS WAN Accelerators in a service group and one has a weight of 100 and the other has a weight of 200 , the one with the weight 100 receives 1/3 of the traffic and the other receives 2/3 of the traffic. The range is 0-65535 . The default value corresponds to the HP EFS WAN Accelerator model (for example, for the Model DL380-5010 the default value is 5010 ; for the Model DL320-2010 the default value is 2010).
encap_scheme <string>	Specifies the traffic forwarding and redirection scheme: gre encapsulation (gre) or Layer-2 (l2) redirection. The either value uses Layer-2 first—if Layer-2 is not supported, gre is tried.

A Basic WCCP Configuration

This section describes how to configure: 1 router, 1 WCCP HP EFS WAN Accelerator, and 1 subnet.

Figure A-1. Basic WCCP Configuration



Connecting the HP EFS WAN Accelerator

To set up an HP EFS WAN Accelerator for WCCP, the HP EFS WAN Accelerator WAN interface is connected to a switch or router (not necessarily the one configured for WCCP) that can reach the switch or router where WCCP is configured and where redirection will occur.

IMPORTANT: When you connect to the WAN port on the HP EFS WAN Accelerator for WCCP, the LAN port no longer passes traffic. You cannot run the HP EFS WAN Accelerator in both in-path and client out-of-path mode.

Configuring the WCCP Router or Multi-Layer Switch

Before you configure the HP EFS WAN Accelerator, you enable your router for WCCP. You create a service group and attach it to the interface where you want packets to be redirected.

In this example, we use unicast protocol messages between the router and the HP EFS WAN Accelerator and all traffic is redirected to the HP EFS WAN Accelerator (The HP EFS WAN Accelerator tells the router to redirect TCP traffic, and if configured on it, certain TCP ports.)

The service group ID is **90** and the interface going towards the WAN is **fastEthernet0/0**.

To configure the WCCP router

- At the system prompt, enter the following set of commands:

```
Router> enable
Router# configure terminal
Router(config)# ip wccp version 2
Router(config)# ip wccp 90
Router(config)# interface fastEthernet 0/0
Router(config-if)# ip wccp 90 redirect out
Router(config-if)# end
Router#
```

TIP: Enter configuration commands, one per line. End with CRTL-Z.

The service group **90** must be defined and configured on the HP EFS WAN Accelerators.

Configuring the Client-Side HP EFS WAN Accelerator

To configure the HP EFS WAN Accelerator to be out-of-path

The HP EFS WAN Accelerator is configured as an out-of-path device on the client side and the service group (defined on the router) is added to it.

In this example, the client-side, IP address is **10.1.0.2**, its WAN router is **10.1.0.1**, and the server-side HP EFS WAN Accelerator, IP address is **10.2.0.2**.

1. Connect to the HP EFS WAN Accelerator CLI. For detailed information, see [“Connecting to the Command-Line Interface” on page 17](#).

2. At the system prompt, enter the following set of commands:

```
client-SH > enable
client-SH # configure terminal
client-SH (config) # in-path enable
client-SH (config) # in-path client-oop enable
```

3. You must save your changes and reboot the appliance for your changes to take effect. At the system prompt, enter the following set of commands:

```
client-SH (config) # interface in-path ip address 10.1.0.2 /16
client-SH (config) # ip in-path-gateway 10.1.0.1
client-SH (config) # write memory
client-SH (config) # reload
```

In this example, we configure the client HP EFS WAN Accelerator to optimize ports **135, 139, 445, 21** and **80** and to pass-through all other traffic.

To add in-path rules to reach the out-of-path, server-side, HP EFS WAN Accelerator

- At the system prompt, enter the following set of commands:

```
client-SH > enable
client-SH # configure terminal
client-SH (config) # in-path rule fixed-target port 135 target-addr 10.2.0.2
client-SH (config) # in-path rule fixed-target port 139 target-addr 10.2.0.2
client-SH (config) # in-path rule fixed-target port 445 target-addr 10.2.0.2
client-SH (config) # in-path rule fixed-target port 21 target-addr 10.2.0.2
client-SH (config) # in-path rule fixed-target port 80 target-addr 10.2.0.2
client-SH (config) # in-path rule pass-through
client-SH (config) # write memory
client-SH (config) # exit
```

Now add the service group to the HP EFS WAN Accelerator so that the router starts redirecting packets.

To add the WCCP service group to the HP EFS WAN Accelerator

- At the system prompt, enter the following set of commands:

```
client-SH > enable
client-SH # configure terminal
client-SH (config) # wccp enable
client-SH (config) # wccp service-group 90 routers 10.1.0.1
client-SH (config) # write memory
client-SH (config) # exit
```

This set of commands instructs the router to redirect all TCP traffic to the HP EFS WAN Accelerator.

Advanced WCCP Features

This section describes the advanced features for WCCP.

Security

To set the password for WCCP

WCCP protocol messages can be authenticated between the router and the HP EFS WAN Accelerator using a password. The maximum password length is 7 characters.

1. On the router, at the system prompt, enter the following command:

```
Router(config)# ip wccp 90 password <your_password>
```

2. On the HP EFS WAN Accelerator, at the system prompt, enter the following command:

```
client-SH (config) # wccp service-group 90 routers 10.1.0.1 password <your_password>
```

NOTE: The same password must be set on the HP EFS WAN Accelerator and the router.

Multicast

If you add multiple routers and HP EFS WAN Accelerators to a service group, you can configure them to exchange WCCP protocol messages through a multicast group.

Configuring a multicast group is advantageous because if a new router is added, it does not need to be explicitly added on each HP EFS WAN Accelerator.

To configure multicast groups on your router

- On your router, at the stem prompt, enter the following set of commands:

```
Router> enable
Router# configure terminal
Router(config)# ip wccp version 2
Router(config)# ip wccp 90 group-address 224.0.0.3
Router(config)# interface fastEthernet 0/0
Router(config-if)# ip wccp 90 redirect out
Router(config-if)# ip wccp 90 group-listen
Router(config-if)# end
Router#
```

TIP: Enter configuration commands, one per line. End each command with CTRL-Z.

To configure multicast groups on the HP EFS WAN Accelerator

- On the client-side HP EFS WAN Accelerator, at the system prompt, enter the following set of commands.

```
client-SH > enable
client-SH # configure terminal
client-SH (config) # wccp enable
client-SH (config) # wccp mcast-ttl 10
client-SH (config) # wccp service-group 90 routers 224.0.0.3
```

```
client-SH (config) # write memory
client-SH (config) # exit
```

TCP Ports Redirection

By default, all TCP ports are redirected, but the HP EFS WAN Accelerator can be configured to tell the router to redirect only certain TCP source or destination ports. A maximum of 7 ports can be specified per service groups.

NOTE: You do not need to configure source and destination ports on the router.

To configure TCP port redirection

- On the client-side HP EFS WAN Accelerator, at the system prompt, enter the following command:

```
client-SH (config) # wccp service-group 90 routers 10.1.0.1 flags ports-
destination ports 135,139,445,21,80
```

Specific Traffic Redirection

If redirection is based on traffic characteristics other than ports, Access Control Lists (ACLs) on the router can define what traffic is redirected.

For example, if you only want the traffic destined for IP address **10.2.0.0/16** to be redirected to the HP EFS WAN Accelerator, you would configure the router in the following manner.

To configure specific traffic redirection on the router

- On the router, enter the following set of commands:

```
Router> enable
Router# configure terminal
Router(config)# ip wccp version 2
Router(config)# access-list 101 permit tcp any 10.2.0.0 255.255.0.0
Router(config)# ip wccp 90 redirect-list 101
Router(config)# interface fastEthernet 0/0
Router(config-if)# ip wccp 90 redirect out
Router(config-if)# end
Router#
```

TIP: Enter configuration commands, one per line. End each command with CTRL-Z.

Load Balancing

You can load-balance using WCCP. Traffic is redirected based on a hashing scheme and the weight of the HP EFS WAN Accelerators. You can hash on a combination of the source IP address, destination IP address, source port, or destination port. The default weight is based on the HP EFS WAN Accelerator model (for example, for the Model DL380-5010 the weight would be 5010). You can modify the default weight.

For example, to configure load balancing, you change the hashing scheme to hash on a destination IP and port and specify a weight on the HP EFS WAN Accelerator. (You do not need to configure the router.)

To change the hashing scheme and assign a weight

1. On the client-side HP EFS WAN Accelerator, enter the following command:

Failover Support

```
client-SH (config) # wccp service-group 90 routers 10.1.0.1 flags dst-
ip-hash,dst-port-hash
```

2. To change the weight on the client-side HP EFS WAN Accelerator, enter the following command:

```
client-SH (config) # wccp service-group 90 routers 10.1.0.1 weight 20
```

You can also provide failover support using WCCP. In a failover configuration, the HP EFS WAN Accelerators periodically announce themselves to the routers. If an HP EFS WAN Accelerator fails, traffic is redirected to the working HP EFS WAN Accelerators.

For example, instead of load balancing traffic between 2 HP EFS WAN Accelerators, you might want traffic to go to only 1 HP EFS WAN Accelerator and to failover to the other HP EFS WAN Accelerator if the first one fails.

To configure failover support, you simply define the weight to be 0 on the backup HP EFS WAN Accelerator. For detailed information, see [“WCCP Commands” on page 109](#).

Troubleshooting

You can check your WCCP configuration on the router and the HP EFS WAN Accelerator.

To check the router configuration

- On the router, at the system prompt, enter the following set of commands:

```
Router>en
Router#show ip wccp
Router#show ip wccp 90 detail
Router#show ip wccp 90 view
```

You can trace WCCP packets and events on the router.

To trace wccp packets and events on the router

- On the router, at the system prompt, enter the following set of commands:

```
Router>en
Router#debug ip wccp events
WCCP events debugging is on
Router#debug ip wccp packets
WCCP packet info debugging is on
Router#term mon
```


APPENDIX B

Configuring PBR

In This Appendix

This appendix describes how to use the Policy Based Routing (PBR) to redirect traffic to an HP EFS WAN Accelerator or group of HP EFS WAN Accelerators. It contains the following sections:

- ◆ [“PBR Overview,”](#) next
- ◆ [“Asymmetrical HP EFS WAN Accelerator Configurations With PBR”](#) on page 118
- ◆ [“PBR Between VLANs”](#) on page 121
- ◆ [“Symmetrical HP EFS WAN Accelerator Configurations With PBR”](#) on page 122
- ◆ [“Troubleshooting”](#) on page 125

PBR Overview

PBR is a router configuration that allows you to define policies to route packets instead of relying on routing protocols. It is enabled on an interface basis and packets coming into a PBR-enabled interface are checked to see if they match the defined policies. If they do match, the packets are applied the rule defined for the policy. If they do not match, they are routed based on the usual routing table. The rule can be to redirect the packets to a specific IP or interface as well as set certain fields in them like the precedence bits.

You can use PBR on the client-side to redirect traffic to an HP EFS WAN Accelerator.

IMPORTANT: PBR must be enabled on the interfaces where the client traffic is arriving, and disabled on the interface corresponding to the HP EFS WAN Accelerator, to avoid an infinite loop. (The HP EFS WAN Accelerator can bounce back the packets it receives either because it is not configured to optimize that traffic or its admission control is refusing new connections.)

On the server-side, the HP EFS WAN Accelerator is configured as in an out-of-path device, although it can also be configured with a PBR router with specific PBR rules.

In all cases, the HP EFS WAN Accelerator that intercepts traffic redirected with PBR is configured with in-path support and Layer-4 switch support enabled. PBR policies can be based on the source or destination IP address, protocol, source port, or destination port.

Asymmetrical HP EFS WAN Accelerator Configurations With PBR

This section describes asymmetric HP EFS WAN Accelerator configurations with PBR. The examples in this section apply only if the clients are on one side of the WAN and are connecting to servers on the other side of the WAN.

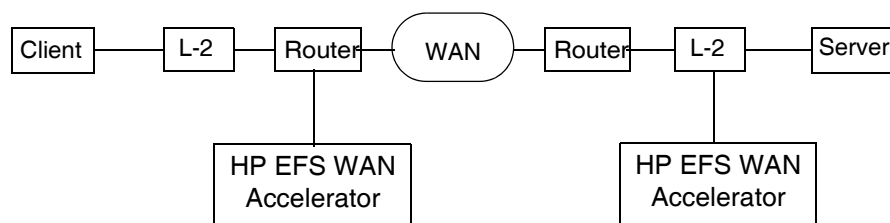
If the client-side HP EFS WAN Accelerator is on a different Layer-2 interface than the clients on the router where PBR is configured, PBR can be enabled on a Layer-2 interface basis, and redirect TCP traffic going to the server-side HP EFS WAN Accelerator.

IMPORTANT: HP recommends you define a policy based on the source or destination IP and not on the TCP source or destination ports because certain protocols use dynamic ports instead of fixed ones such as Exchange and FTP.

Single Subnet, Client-Side PBR Configuration

In this configuration, PBR is enabled on the interface of the client-side router connected to the Layer-2 switch that redirects traffic to the HP EFS WAN Accelerator.

Figure 1-2. Single Subnet, Client-Side, HP EFS WAN Accelerator Attached to a Router



The client-side router has interface **fastEthernet 0/0** attached to the Layer-2 switch and **fastEthernet0/1** attached to the HP EFS WAN Accelerator.

The server-side router has interface **fastEthernet0/0** attached to the Layer-2 switch.

This example uses the following IP addresses:

- ◆ **Client-side.** Client=10.0.0.2/16, HP EFS WAN Accelerator=10.2.0.2/16, Router(fastEthernet0/0)=10.0.0.1/16, Router(fastEthernet0/1)=10.2.0.1/16
- ◆ **Server-side.** Server=10.1.0.2/16, HP EFS WAN Accelerator=10.1.0.3/16, Router(fastEthernet0/0)=10.1.0.1/16

The HP EFS WAN Accelerator is configured as a client-side, HP EFS WAN Accelerator in an in-path configuration with Layer-4 switch support. It must reach the remote network through the router from the in-path interface and a fixed-target in-path rule is defined for the remote out-of-path HP EFS WAN Accelerator.

To configure the client-side HP EFS WAN Accelerator

1. Connect to the client-side HP EFS WAN Accelerator CLI. For detailed information, see [“Connecting to the Command-Line Interface” on page 17](#).
2. On the client-side HP EFS WAN Accelerator, at the system prompt, enter the following set of commands:

```
client-SH > enable
client-SH # configure terminal
client-SH (config) # in-path enable
You must restart the service for your changes to take effect.
client-SH (config) # in-path layer-4 enable
client-SH (config) # interface in-path ip address 10.2.0.2 /16
client-SH (config) # ip in-path-gateway 10.2.0.1
client-SH (config) # in-path rule fixed-target addr 10.1.0.2/32 port 135
target-addr 10.1.0.3
client-SH (config) # in-path rule fixed-target addr 10.1.0.2/32 port 139
target-addr 10.1.0.3
client-SH (config) # in-path rule fixed-target addr 10.1.0.2/32 port 445
target-addr 10.1.0.3
client-SH (config) # in-path rule fixed-target addr 10.1.0.2/32 port 21
target-addr 10.1.0.3
client-SH (config) # in-path rule fixed-target addr 10.1.0.2/32 port 80
target-addr 10.1.0.3
client-SH (config) # write memory
client-SH (config) # reload
```

NOTE: You must save your changes and reboot the appliance for your changes to take effect.

This configuration optimizes CIFS, Exchange, FTP, and HTTP traffic.

To configure the client-side router

- On the client-side router, at the system prompt, enter the following set of commands:

```
Router#configure terminal
Router(config)#access-list 101 permit tcp any 10.1.0.2 255.255.255.255
Router(config)#interface fastEthernet 0/0
Router(config-if)#ip address 10.0.0.1 255.255.0.0
Router(config-if)#ip policy route-map TrafficToS
Router(config-if)#exit
Router(config)#route-map TrafficToS permit 10
Router(config-route-map)#match ip address 101
Router(config-route-map)#set ip next-hop 10.2.0.2
Router(config-route-map)#exit
Router(config)#interface fastEthernet 0/1
Router(config-if)#ip address 10.2.0.1 255.255.0.0
```

```
Router(config-if)#end
Router#
```

TIP: Enter configuration commands, one per line. End with CTRL-Z.

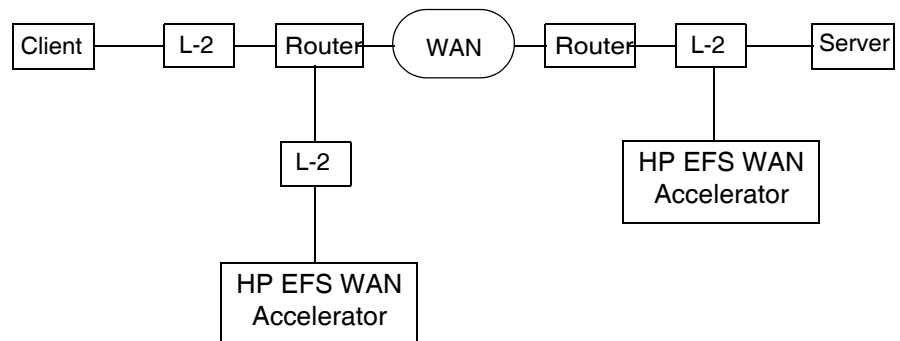
The Access Control List (ACL) defines the matching criteria. The route-map defines the action corresponding to the matching criteria. The **ip policy route-map** command attaches a route-map to an interface.

For detailed information about configuring Cisco routers for PBR, see http://www.cisco.com/en/US/products/sw/iosswrel/ps1831/products_configuration_guide_chapter09186a00800c60d2.html#23550.

Client-Side HP EFS WAN Accelerator Attached to Router through a Switch

In this configuration, PBR is enabled on the interface of the client-side router connected to the Layer-2 switch that redirects traffic to the HP EFS WAN Accelerator. Communication between the client-side HP EFS WAN Accelerator and the clients must be through the client-side router.

Figure 1-3. Client-Side HP EFS WAN Accelerator Attached to a Router through a Switch

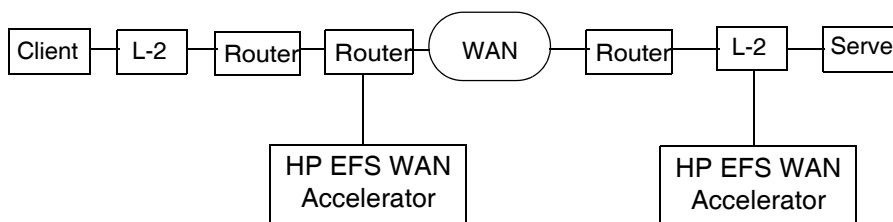


The configuration steps are the same as “[Single Subnet, Client-Side PBR Configuration](#)” on page 118.

Client-Side HP EFS WAN Accelerator Attached to an Inside Router

In this configuration, PBR is enabled on the router interface connected to the Layer-2 switch that redirects traffic to the HP EFS WAN Accelerator. The same PBR rules should not be enabled on the WAN router (or any other router on the way to the WAN).

Figure 1-4. Client-Side HP EFS WAN Accelerator Attached to an Inside Router

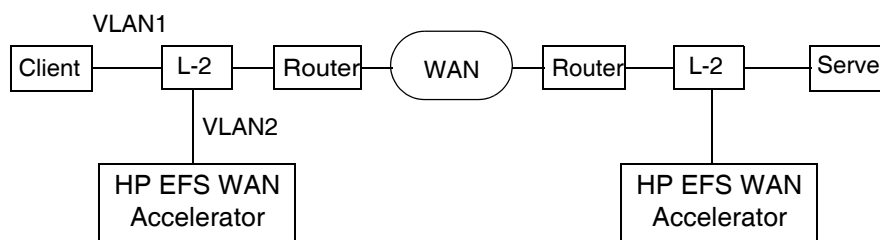


The configuration steps are the same as [“Single Subnet, Client-Side PBR Configuration” on page 118](#). (The configured router is the router to which the HP EFS WAN Accelerator is attached.)

PBR Between VLANs

If there is not a clear physical separation between the client and the HP EFS WAN Accelerator on the router where PBR is defined, you can use Virtual Local Area Networks (VLANs) to create a virtual separation.

Figure 1-5. PBR Between VLANs



The HP EFS WAN Accelerator is configured in a different VLAN than the clients VLAN and PBR is enabled on the clients VLAN interface and disabled on the HP EFS WAN Accelerator VLAN interface.

In this configuration, the HP EFS WAN Accelerator is attached to any Layer-2 switch that the router can reach (even the same switch as the clients). VLAN trunking should be enabled between the Layer-2 switch and the PBR router (not on the link between the HP EFS WAN Accelerator and the switch).

You reuse the same IP addresses as in the single subnet case and the router has 2 VLAN interfaces on `fastEthernet0/0`. For details, see [“Single Subnet, Client-Side PBR Configuration” on page 118](#).

To configure the HP EFS WAN Accelerator

The configuration is the same as in the single subnet case. For detailed information, see [“Single Subnet, Client-Side PBR Configuration” on page 118](#). With a different subnet configuration the route-map is attached to a VLAN interface instead of an ethernet interface.

This example assumes that VLAN trunking is already configured on the Layer-2 switch and the router for the clients VLAN (VLAN1) and that the Layer-2 switch configuration for VLAN2 is already completed.

To configure the Cisco router

1. On the client-side router, at the system prompt, enter the following set of commands:

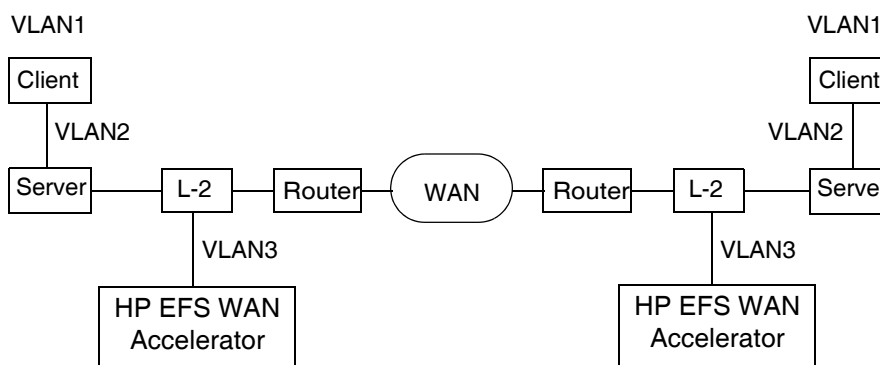
```
Router#configure terminal
Router(config)#interface fastEthernet 0/0.2
Router(config-subif)#encapsulation dot1Q 2
Router(config-subif)#ip address 10.2.0.1 255.255.0.0
Router(config-subif)#exit
Router(config)#access-list 101 permit tcp any 10.1.0.2 255.255.255.255
Router(config)#interface fastEthernet 0/0.1
Router(config-subif)#encapsulation dot1Q 1
Router(config-subif)#ip address 10.0.0.1 255.255.0.0
Router(config-subif)#ip policy route-map TrafficToS
Router(config-subif)#exit
Router(config)#route-map TrafficToS permit 10
Router(config-route-map)#match ip address 101
Router(config-route-map)#set ip next-hop 10.2.0.2
Router(config-route-map)#end
Router#
```

TIP: Enter configuration commands, one per line. End with CTRL-Z.

Symmetrical HP EFS WAN Accelerator Configurations With PBR

In the case where clients and servers are on both sides of the WAN, PBR can be configured on both sides with each router having the reversed rules of the other router.

Figure 1-6. Symmetrical HP EFS WAN Accelerator Configurations with PBR



For this example, assume that clients, servers, and HP EFS WAN Accelerators are all on a separate VLANs and the Layer-2 switch is attached to the router **fastEthernet0/0** interface. This example uses the following IP addresses:

- ◆ **Left-side.** Client=10.0.1.2/24, Server=10.0.2.2/24, HP EFS WAN Accelerator=10.0.3.2/24
- ◆ **Right-side.** Client=10.1.1.2/24, Server=10.1.2.2/24, HP EFS WAN Accelerator=10.1.3.2/24

Each router has an interface for each VLAN.

To configure the HP EFS WAN Accelerators

1. On the left HP EFS WAN Accelerator, at the system prompt, enter the following set of commands:

```
Left-SH > enable
Left-SH # configure terminal
Left-SH (config) # in-path enable
You must restart the service for your changes to take effect.
Left-SH (config) # in-path layer-4 enable
```

NOTE: You must save your changes and reboot the HP EFS WAN Accelerator for your changes to take effect.

```
Left-SH (config) # interface in-path ip address 10.0.3.2 /24
Left-SH (config) # ip in-path-gateway 10.0.3.1
Left-SH (config) # in-path rule fixed-target addr 10.1.2.2/32 port 135
target-addr 10.1.3.2 target-port 7800
Left-SH (config) # in-path rule fixed-target addr 10.1.2.2/32 port 139
target-addr 10.1.3.2 target-port 7800
Left-SH (config) # in-path rule fixed-target addr 10.1.2.2/32 port 445
target-addr 10.1.3.2 target-port 7800
Left-SH (config) # in-path rule fixed-target addr 10.1.2.2/32 port 21
target-addr 10.1.3.2 target-port 7800
Left-SH (config) # in-path rule fixed-target addr 10.1.2.2/32 port 80
target-addr 10.1.3.2 target-port 7800
Left-SH (config) # write memory
Left-SH (config) # reload
```

2. On the right HP EFS WAN Accelerator, at the system prompt, enter the following set of commands:

```
Right-SH > enable
Right-SH # configure terminal
Right-SH (config) # in-path enable
You must restart the service for your changes to take effect.
Right-SH (config) # in-path layer-4 enable
You must save your changes and reboot the appliance for your changes to take effect.
Right-SH (config) # interface in-path ip address 10.1.3.2 /24
Right-SH (config) # ip in-path-gateway 10.1.3.1
Right-SH (config) # in-path rule fixed-target addr 10.0.2.2/32 port 135
target-addr 10.0.3.2 target-port 7800
Right-SH (config) # in-path rule fixed-target addr 10.0.2.2/32 port 139
target-addr 10.0.3.2 target-port 7800
Right-SH (config) # in-path rule fixed-target addr 10.0.2.2/32 port 445
target-addr 10.0.3.2 target-port 7800
Right-SH (config) # in-path rule fixed-target addr 10.0.2.2/32 port 21
target-addr 10.0.3.2 target-port 7800
```

```
Right-SH (config) # in-path rule fixed-target addr 10.0.2.2/32 port 80
target-addr 10.0.3.2 target-port 7800
Right-SH (config) # write memory
Right-SH (config) # reload
```

To configure a Cisco router

1. On the left router, at the system prompt, enter the following commands:

TIP: Enter configuration commands, one per line; end with CTRL-Z.

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fastEthernet 0/0.1
Router(config-subif)#encapsulation dot1Q 1
Router(config-subif)#ip address 10.0.1.1 255.255.255.0
Router(config-subif)#ip policy route-map TrafficToRightS
Router(config-subif)#exit
Router(config)#interface fastEthernet 0/0.2
Router(config-subif)#encapsulation dot1Q 2
Router(config-subif)#ip address 10.0.2.1 255.255.255.0
Router(config-subif)#ip policy route-map TrafficFromLeftS
Router(config-subif)#exit
Router(config)#interface fastEthernet 0/0.3
Router(config-subif)#encapsulation dot1Q 3
Router(config-subif)#ip address 10.0.3.1 255.255.255.0
Router(config-subif)#exit
Router(config)#access-list 101 permit tcp any 10.1.2.2 255.255.255.255
Router(config)#access-list 201 permit tcp 10.0.2.2 255.255.255.255 any
Router(config)#route-map TrafficToRightS permit 10
Router(config-route-map)#match ip address 101
Router(config-route-map)#set ip next-hop 10.0.3.2
Router(config-route-map)#exit
Router(config)#route-map TrafficFromLeftS permit 10
Router(config-route-map)#match ip address 201
Router(config-route-map)#set ip next-hop 10.0.3.2
Router(config-route-map)#end
Router#
```

2. On the right router, at the system prompt, enter the following set of commands:

```
Router#configure terminal
Router(config)#interface fastEthernet 0/0.1
Router(config-subif)#encapsulation dot1Q 1
Router(config-subif)#ip address 10.1.1.1 255.255.255.0
Router(config-subif)#ip policy route-map TrafficToLeftS
Router(config-subif)#exit
Router(config)#interface fastEthernet 0/0.2
Router(config-subif)#encapsulation dot1Q 2
Router(config-subif)#ip address 10.1.2.1 255.255.255.0
Router(config-subif)#ip policy route-map TrafficFromRightS
Router(config-subif)#exit
Router(config)#interface fastEthernet 0/0.3
Router(config-subif)#encapsulation dot1Q 3
Router(config-subif)#ip address 10.1.3.1 255.255.255.0
Router(config-subif)#exit
Router(config)#access-list 101 permit tcp any 10.0.2.2 255.255.255.255
Router(config)#access-list 201 permit tcp 10.1.2.2 255.255.255.255 any
Router(config)#route-map TrafficToLeftS permit 10
Router(config-route-map)#match ip address 101
Router(config-route-map)#set ip next-hop 10.1.3.2
Router(config-route-map)#exit
```

```
Router(config)#route-map TrafficFromRightS permit 10
Router(config-route-map)#match ip address 201
Router(config-route-map)#set ip next-hop 10.1.3.2
Router(config-route-map)#end
Router#
```

Troubleshooting

On Cisco routers with a recent IOS version, the PBR Support for Multiple Tracking Options feature allows the router to check if a machine is still functioning. This feature can detect if the HP EFS WAN Accelerator is up and, if not, to stop redirecting the traffic to it.

You can use the following methods to check an HP EFS WAN Accelerator:

- ◆ ICMP **ping** reachability to a remote device.
- ◆ Application running on a remote device (for example, the device responds to an **HTTP GET** request).
- ◆ A route exists in the Routing Information Base (RIB) (for example, policy route only if **10.2.2.0/24** is in the RIB).
- ◆ Interface state (for example, packets received on **E0** should be policy routed out **E1** only if **E2** is down).

APPENDIX C

Configuring RADIUS and TACACS Servers

In This Appendix

This appendix describes how to configure Remote Authentication Dial-In User Service (RADIUS) or Terminal Access Controller Access Control System (TACACS) servers for the HP EFS WAN Accelerator. It contains the following sections:

- ◆ [“Overview,”](#) next
- ◆ [“Configuring a RADIUS Server”](#) on page 129
- ◆ [“Configuring a TACACS+ Server”](#) on page 130

This appendix assumes you are familiar with RADIUS and TACACS authentication methods.

Overview

The HP EFS WAN Accelerator can use a RADIUS or TACACS+ authentication system for logging in administrative and monitor users. The following methods for user authentication are provided with the HP EFS WAN Accelerator:

- ◆ local
- ◆ radius
- ◆ tacacs+

The order in which authentication is attempted is based on the order specified in the AAA authentication method list. The **local** value must always be specified somewhere in the method list. The CLI command set is a subset of the commands from the Cisco CLI.

The authentication methods list provides backup methods if a method fails to authenticate a user. Failure is defined as no response for the method. If a deny is received from the method being tried, no other methods are attempted.

The HP EFS WAN Accelerator does not have the ability to set a per interface authentication policy. The same authentication method list is used for all interfaces (that is, default). You cannot configure authentication methods with subsets of the RADIUS or TACACS+ servers specified (that is, there are no server groups).

The following CLI commands are available for RADIUS and TACACS+ authentication:

- ◆ Authentication
 - ◆ [“aaa authentication login default” on page 53](#)
 - ◆ [“aaa authorization map default-user” on page 54](#)
 - ◆ [“aaa authorization map order” on page 54](#)
 - ◆ [“show authentication method” on page 29](#)
- ◆ RADIUS Configuration
 - ◆ [“radius-server host” on page 88](#)
 - ◆ [“radius-server key” on page 89](#)
 - ◆ [“radius-server retransmit” on page 90](#)
 - ◆ [“radius-server timeout” on page 90](#)
- ◆ TACACS+ Configuration
 - ◆ [“tacacs-server host” on page 96](#)
 - ◆ [“tacacs-server key” on page 97](#)
 - ◆ [“tacacs-server retransmit” on page 97](#)
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 - ◆ [“username password cleartext” on page 100](#)
 - ◆ [“username password encrypted” on page 100](#)
 - ◆ [“username disable” on page 98](#)

Configuring a RADIUS Server

You can, on a per user basis, specify a different local account mapping by using a vendor specific attribute. These instructions describe how to configure the FreeRADIUS server to return an attribute (which specifies the local user account as an ASCII string). The file paths shown are the defaults. If the RADIUS server installation has been customized, the paths might differ.

The directory `/usr/local/share/freeradius` is where the dictionary files are stored. This is where various RADIUS attributes can be defined. Assuming the vendor has no established dictionary file in the FreeRADIUS distribution, you begin the process by creating a file called: **dictionary.<vendor>**.

The contents of this file define a vendor identifier (which should be the SMI Network Management Private Enterprise Code of the Vendor), and the definitions for any vendor specific attributes.

In the following example the Vendor Enterprise Number for HP is **17613** and the Enterprise Local User Name Attribute is **1**. These numbers specify that a given user is an **admin** or **monitor** user in the RADIUS server (instead of using the HP EFS WAN Accelerators default for users not named **admin** and **monitor**).

These instruction assume you are running FreeRADIUS, v.1.0 which is available for download from <http://www.freeradius.org>.

To install FreeRADIUS on a Linux computer

1. Download FreeRadius from <http://www.freeradius.org>.
2. At your system prompt, enter the following set of commands:

```
>tar xvfz freeradius-$VERSION.tar.gz
>cd freeradius-$VERSION
>./configure
>make
>make install #as root
```

To add acceptance requests on the RADIUS server

1. In a text editor, open the `/usr/local/etc/raddb/clients.conf` file.
2. To create the key for the RADIUS server, add the following text to the **clients.conf** file:

```
client 10.0.0.0/16 {
    secret = testradius
    shortname = main-network
    nastype = other
}
```

3. In a text editor, create a `/usr/local/share/freeradius/dictionary.rbt` file for HP.
4. Add the following text to the **dictionary.rbt** file.

```
VENDOR          RBT          17163
ATTRIBUTE       Local-User    1          string      RBT
```

5. Add the following line to the `/usr/local/share/freeradius/dictionary`:

```
$INCLUDE dictionary.rbt
```

6. Add users to the Radius server by editing the `/usr/local/etc/raddb/users` file. For example:

```
"admin"          Auth-Type := Local, User-Password == "radadmin"
                  Reply-Message = "Hello, %u"
"monitor"        Auth-Type := Local, User-Password == "radmonitor"
                  Reply-Message = "Hello, %u"
"raduser"        Auth-Type := Local, User-Password == "radpass"
                  Local-User = "monitor", Reply-Message = "Hello, %u"
```

7. Start the server using `/usr/local/sbin/radiusd`. Use the `-X` option if you want to debug the server.

NOTE: The **raduser** is the monitor user as specified by Local, User.

Configuring a TACACS+ Server

The following section assumes you are running TACACS+ authentication system.

The TACACS+ Local User Service is **rbt-exec**. The Local User Name Attribute is **local-user-name**. This attribute controls whether a user who is not named **admin** or **monitor** is an administrator or monitor user (instead of using the HP EFS WAN Accelerator default). For the HP EFS WAN Accelerator, the users listed in the TACACS+ server must have PAP authentication enabled.

The following procedures install the free TACACS+ server on a Linux computer. Cisco Secure can be used as a TACACS+ server. There is also a free TACACS+ server.

To download TACACS+

1. Download TACACS+ from:
http://www.gazi.edu.tr/tacacs/get.php?src=tac_plus_v9a.tar.gz.
2. At your system prompt, enter the following set of commands:

```
>tar xvfz tac_plus_v9a.tar.gz
>cd tac_plus_v9a
>./configure
```
3. In a text editor, open the **Makefile** and uncomment the `OS=-DLINUX` line (or other lines appropriate for the operating system of the host).
4. On Linux, in a text editor open the **tac_plus.h** file and uncomment the `#define CONST_SYSERRLIST` line.

5. At the system prompt, enter:

```
>make tac_plus
```

6. As the root user, enter the following command:

```
>make install
```

7. To add users to the TACACS server edit the `/usr/local/etc/tac_plus.conf` file. For example:

```
key = testtacacs
user = admin {
    pap = cleartext "tacadmin"
user = monitor {
    pap = cleartext "tacmonitor"
user = tacuser {
    pap = cleartext "tacpass"
    service = rbt-exec {
        local-user-name = "monitor"
    }
}
```

The **tacuser** is a monitor user as specified by **local-user-name**.

NOTE: The **chap**, **opap**, and **arap** variables can be specified in a similar manner, but only **pap** is needed.

8. Start the server by executing:

```
>/usr/local/sbin/tac_plus -C /usr/local/etc/tac_plus.conf
```


APPENDIX D

HP EFS WAN Accelerator Ports

In This Appendix

This appendix describes the HP EFS WAN Accelerator default and supported secure ports. It contains the following sections:

- ◆ [“Default Ports,”](#) next
- ◆ [“Commonly Optimized Ports”](#) on page 133
- ◆ [“Interactive Ports Automatically Forwarded by the HP EFS WAN Accelerator”](#) on page 134
- ◆ [“Secure Ports Automatically Forwarded by the HP EFS WAN Accelerator”](#) on page 134

Default Ports

The HP EFS WAN Accelerator uses the following default ports.

- ◆ In-path Listening Port: 7800
- ◆ Out-of-Path Server Port: 7810
- ◆ Failover Port: 7820
- ◆ Exchange Port: 7830

Commonly Optimized Ports

The HP EFS WAN Accelerator by default optimizes all ports. If you do not want the HP EFS WAN Accelerator to optimize all ports for an in-path or out-of path configuration, you can specify specific ports for optimization.

Although these ports can vary according to your requirements, the following ports are commonly specified for in-path and out-of-path configurations:

- ◆ 80
- ◆ 135
- ◆ 139

- ◆ 445
- ◆ 7830

Interactive Ports Automatically Forwarded by the HP EFS WAN Accelerator

The following interactive ports are automatically forwarded by the HP EFS WAN Accelerator by the HP EFS WAN Accelerator when you enable forwarding of interactive ports in the Management Console.

Port	Description
7	TCP ECHO
23	Telnet
37	UDP/Time
107	Remote Telnet Service
513	Remote Login
514	Shell
3389	MS WBT Server, TS/Remote Desktop
5631	PC Anywhere
5900-5903	VNC
6000	X11

For detailed information about the **in-path forward interactive** command, see [“in-path forward interactive” on page 71](#).

For detailed information about how to set interactive port forwarding, see the *HP StorageWorks Enterprise File Services WAN Accelerator Management Console User's Guide*.

Secure Ports Automatically Forwarded by the HP EFS WAN Accelerator

The following tables contain the secure ports that are automatically forwarded by the HP EFS WAN Accelerator when you enable forwarding of secure ports in the Management Console.

For detailed information about the **in-path forward secure** command, see [“in-path forward secure” on page 72](#).

For detailed information about how to enable forwarding of secure ports, see the *HP StorageWorks Enterprise File Services WAN Accelerator Management Console User's Guide*.

Type	Port	Description
ssh	22/tcp	SSH Remote Login Protocol
https	443/tcp	http protocol over TLS/SSL
smtps	465/tcp	# SMTP over SSL (TLS)
nntps	563/tcp	nntp protocol over TLS/SSL (was snntp)
imap4-ssl	585/tcp	IMAP4+SSL (use 993 instead)
sshell	614/tcp	SSLshell
ldaps	636/tcp	ldap protocol over TLS/SSL (was sldap)
ftps-data	989/tcp	ftp protocol, data, over TLS/SSL
ftps	990/tcp	ftp protocol, control, over TLS/SSL
telnets	992/tcp	telnet protocol over TLS/SSL
imaps	993/tcp	imap4 protocol over TLS/SSL
pop3s	995/tcp	pop3 protocol over TLS/SSL (was spop3)
l2tp	1701/tcp	l2tp
pptp	1723/tcp	pptp
fttps	3713/tcp	TFTP over TLS

The following table contains the uncommon ports automatically forwarded by the HP EFS WAN Accelerator.

Type	Port	Description
nsiiops	261/tcp	IIOP Name Service over TLS/SSL
ddm-ssl	448/tcp	DDM-Remote DB Access Using Secure Sockets
corba-iiop-ssl	684/tcp	CORBA IIOP SSL
ieee-mms-ssl	695/tcp	IEEE-MMS-SSL
ircs	994/tcp	irc protocol over TLS/SSL
njenet-ssl	2252/tcp	NJENET using SSL
ssm-cssps	2478/tcp	SecurSight Authentication Server (SSL)
ssm-els	2479/tcp	SecurSight Event Logging Server (SSL)
giop-ssl	2482/tcp	Oracle GIOP SSL
ttc-ssl	2484/tcp	Oracle TTC SSL
syncserverssl	2679/tcp	Sync Server SSL
dicom-tls	2762/tcp	DICOM TLS
realsecure	2998/tcp	Real Secure

Type	Port	Description
orbix-loc-ssl	3077/tcp	Orbix 2000 Locator SSL
orbix-cfg-ssl	3078/tcp	Orbix 2000 Locator SSL
cops-tls	3183/tcp	COPS/TLS
csvr-sslproxy	3191/tcp	ConServR SSL Proxy
xnm-ssl	3220/tcp	XML NM over SSL
msft-gc-ssl	3269/tcp	Microsoft Global Catalog with LDAP/SSL
networklenss	3410/tcp	NetworkLens SSL Event
xtrms	3424/tcp	xTrade over TLS/SSL
jt400-ssl	3471/tcp	jt400-ssl
seclayer-tls	3496/tcp	securitylayer over tls
vt-ssl	3509/tcp	Virtual Token SSL Port
jboss-iiop-ssl	3529/tcp	JBoss IIOP/SSL
ibm-diradm-ssl	3539/tcp	IBM Directory Server SSL
can-nds-ssl	3660/tcp	Candle Directory Services using SSL
can-ferret-ssl	3661/tcp	Candle Directory Services using SSL
linktest-s	3747/tcp	LXPRO.COM LinkTest SSL
asap-tcp-tls	3864/tcp	asap/tls tcp port
topflow-ssl	3885/tcp	TopFlow SSL
sdo-tls	3896/tcp	Simple Distributed Objects over TLS
sdo-ssh	3897/tcp	Simple Distributed Objects over SSH
iss-mgmt-ssl	3995/tcp	ISS Management Svcs SSL
suucp	4031/tcp	UUCP over SSL
wsm-server-ssl	5007/tcp	wsm server ssl
sip-tls	5061/tcp	SIP-TLS
imqtunnels	7674/tcp	iMQ SSL tunnel
davsrscs	9802/tcp	WebDAV Source TLS/SSL
intrepid-ssl	11751/tcp	Intrepid SSL
rets-ssl	12109/tcp	RETS over SSL

Glossary

ARP. Address Resolution Protocol. An IP protocol used to obtain a node's physical address.

Bandwidth. The upper limit on the amount of data, typically in kilobits per second (kbps), that can pass through a network connection. Greater bandwidth indicates faster data transfer capability.

Bit. A Binary digit. The smallest unit of information handled by a computer; either 1 or 0 in the binary number system.

Blade. One component in a system that is designed to accept some number of components (blades).

CIFS. Common Internet File System. CIFS is the remote file system access protocol used by Windows servers and clients to share files across the network.

Default gateway. The default address of a network or web site. It provides a single domain name and point of entry to the network or site.

DHCP. Dynamic Host Configuration Protocol. Software that automatically assigns IP addresses to client stations logging onto a TCP/IP network.

Domain. In the Internet, a portion of the Domain Name Service (DNS) that refers to groupings of networks based on the type of organization or geography.

DNS. Domain Name Service. System used in the Internet for translating names of network nodes into IP addresses. A Domain Name Server notifies hosts of other host IP addresses, associating host names with IP addresses.

Ethernet. The most widely used Local Area Network (LAN) access method.

Gateway. A computer that acts as an intermediate device two or more networks that use the same protocols. The gateway functions as an entry and exit point to the network. Transport protocol conversion might not be required, but some form of processing is typically performed.

Gigabit Ethernet. An Ethernet technology that raises transmission speed to 1 Gbps (1000 Mbps).

Host. A computer or other computing device that resides on a network.

Host address. The IP address assigned to each computer attached to the network.

Host name. Name given to a computer, usually by DNS.

HTTP. HyperText Transport Protocol. The protocol used by web browsers to communicate with web servers.

Interface. The point at which a connection is made between two elements, systems, or devices so that they can communicate with one another.

Internet. The collection of networks tied together to provide a global network that use the TCP/IP suite of protocols.

IP. Internet protocol. Network layer protocol in the TCP/IP stack that enables a connectionless internetwork service.

IP address. In IP version 4 (IPv4), a 32-bit address assigned to hosts using the IP protocol. Also called an Internet address.

Latency. Delay between a request being issued and its response being received.

Layer-4. A communications protocol (called the transport layer) responsible for establishing a connection and ensuring that all data has arrived safely. The application delivers its data to the communications system by passing a stream of data bytes to the transport layer along with the socket (the IP address of the station and a port number) of the destination machine.

MAPI. Messaging API. A programming interface from Microsoft that enables a client application to send and receive mail from Exchange Server or a Microsoft Mail (MS Mail) messaging system. Microsoft applications such as Outlook, the Exchange client, and Microsoft Schedule use MAPI.

Microsoft Exchange. Messaging and groupware software for Windows from Microsoft. The Exchange server is an Internet-compliant messaging system that runs under Windows systems and can be accessed by web browsers, the Windows Inbox, Exchange client or Outlook. The Exchange server is also a storage system that can hold anything that needs to be shared.

Netmask. A 32-bit mask which shows how an Internet address is divided into network, subnet, and host parts. The netmask has ones in the bit positions in the 32-bit address which are used for the network and subnet parts, and zeros for the host part. The mask must contain at least the standard network portion (as determined by the class of the address), and the subnet field should be contiguous with the network portion.

NFS. Network File System. The file sharing protocol in a UNIX network.

NIS. Network Information Services. A naming service from that allows resources to be easily added, deleted or relocated.

Packet. A unit of information transmitted, as a whole, from one device to another on a network.

Probe. A small utility program that is used to investigate, or test, the status of a system, network or web site.

Policy. Routing and Quality of Service (QoS) scheme that forwards data packets to network interfaces based on user-configured parameters.

Port. A pathway into and out of the computer or a network device such as a hub, switch, or router. On network devices, the ports are for communications, typically connecting Ethernet cables or other network devices.

Router. A device that forwards data packets from one LAN or WAN to another. Based on routing tables and routing protocols, routers read the network address in each transmitted frame and make a decision on how to send it based on the most expedient route (traffic load, line costs, speed, bad lines, etc.). Routers work at Layer-3 in the protocol stack, whereas bridges and switches work at the Layer-2.

SNMP. Simple Network Management Protocol. A network protocol that provides a way to monitor network devices, performance, and security and to manage configurations and collect statistics.

Switch. A network device that filters and forwards frames based on the destination address of each frame. The switch operates at Layer-2 (data link layer) of the Open System Interconnection (OSI) model.

TCP. Transmission Control Protocol. The error correcting Transport layer (Layer-4) in the TCP/IP protocol suite.

TCP/IP. Transmission Control Protocol/Internet Protocol. The protocol suite used in the Internet, intranets, and extranets. TCP provides transport functions, which ensures that the total amount of bytes sent is received correctly at the other end. TCP/IP is a routable protocol, and the IP part of TCP/IP provides this capability.

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